DOCUMENT RESUME

ED 344 044 CE 060 816

TITLE	Hands and Minds: Redefining Success in Vocational Technical Education.
INSTITUTION	Education Writers Association, Washington, DC.
SPONS AGENCY	William T. Grant Foundation, Washington, DC. Commission on Youth and America's Future.
REPORT NO	ISBN-0-943445-07-8
PUB DATE	92
NOTE	46p.
AVAILABLE FROM	Education Writers Association, 1001 Connecticut Avenue, NW, Suite 310, Washington, DC 20036 (1-9 copies: $5.00 each, prepaid, add $2.00 if billed; 10-24 copies: $4.00 each; 25 or more: $3.00 each).
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Academic Education; *Demonstration Programs; *Educational Change; *Education Work Relationship; Excellence in Education; High Schools; *Integrated Curriculum; *Noncollege Bound Students; Potential Dropouts; Program Effectiveness; Relevance (Education); School Community Relationship; Success; *Vocational Education
IDENTIFIERS	Cambridge Public Schools MA; Delaware (New Castle County); Oakland Unified School District CA; Rockbridge County Public Schools VA

ABSTRACT

This report describes four programs identified as fitting the criteria of a program that bridges the worlds of learning, earning, and adulthood for all students. "Overview: Making School Work for All Students" (Linda Chion-Kenney) provides background and describes criteria to be met by schools serving needs of vocational students. "Oakland's Health and Bioscience Academy: Heavy on Science and Experience for 'Disenchanted' Students" (Jacqueline Cutler) discusses a school within a school that recruits economically and educationally impoverished students. "New Castle County, Delaware: Senior Projects Provide Anchor for Adulthood" (Vyola Willson) describes a school that requires ninth graders to begin a senior project to which coursework and shopwork are tied throughout the school years. "Rockbridge County, Virginia: Weaving together Academics and Work" (Neal Thompson) focuses on a small rural school that has eliminated the general education track and ability grouping. "Rindge School of Technical Arts in Cambridge, Massachusetts: Using the Community to Develop Student Talents" (Catherine Foster) describes a school within a school that personalizes instruction for students at risk of getting lost in a large urban high school and connects learning to the world at large. Other contents include descriptions of seven other programs, questions asked during site visits, a list of sources and materials, and a list of 23 selected materials. (YLB)

ED344044

HANDS AND MINDS:

Redefining Success in Vocational Technical Education

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

R Bernedo

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

A Report of the Education Writers Association

Published by:

Center for Law and Education
Council of Chief State School Officers
National Alliance of Business
National Association of Counties
National Association of Secondary School Principals
National Association of State Boards of Education
National Association of State Directors of Vocational Technical Education
National Collaboration for Youth
National Conference of State Legislatures
National Governors' Association
National Youth Employment Coalition
American Association of School Administrators
Southern Regional Education Board State Vocational Education Consortium
William T. Grant Foundation Commission on Youth and America's Future
Office of Vocational and Adult Education, U.S. Department of Education
Office of Work-Based Learning, U.S. Department of Labor

CE 060 816

BEST COPY AVAILABLE

This report was made possible by financial assistance from the William T. Grant Foundation Commission on Youth and America's Future. All reporting and editing was carried out by the staff and freelance writers working for the Education Writers Association. The report was released originally in April 1992 as *Learning Work: Redefining Success in Vocational Education.*

The Education Writers Association, formed in 1947, is the national professional association of education reporters and writers.

Other EWA reports in this series include: *First Jobs* (a look at the school-to-work transition in the U.S.), and *Training for Work: What the U.S. Can Learn From Europe.* A related report examines the effectiveness of programs to educate and train welfare recipients and programs for workplace literacy: *Is the Story Literacy, Decent Jobs or Political Will?*

Table of Contents

INTRODUCTION i

OVERVIEW: Making School Work for All Students
by Linda Chion-Kenney 1

OAKLAND'S HEALTH AND BIOSCIENCE ACADEMY: Heavy on Science and Experience for 'Disenchanted' Students
by Jacqueline Cutler, *Oakland Tribune* 5

NEW CASTLE COUNTY, DELAWARE: Senior Projects Provide Anchor for Adulthood
by Vyola P. Willson 12

ROCKBRIDGE COUNTY, VIRGINIA: Weaving Together Academics and Work
by Neal Thompson, *Roanoke Times and World News* 19

RINDGE SCHOOL OF TECHNICAL ARTS IN CAMBRIDGE, MASSACHUSETTS: Using the Community to Develop Student Talents
by Catherine Foster, *Christian Science Monitor* 26

About the Reporters 31

Other Programs 32

Questions To Ask 35

Sources and Materials 37

Printed in the United States of America by Automated Graphics, Inc.

ISBN: 0-943445-07-8

Copies may be ordered from:

The Education Writers Association
1001 Connecticut Avenue N.W. #310
Washington, D.C. 20036

1 to 9 copies, $5.00 each prepaid
10 to 24 copies, $4.00 each prepaid
25+ copies, $3.00 each prepaid

This publication is not copyrighted and may be freely quoted without prior permission, provided the source is identified as *Hands and Minds:: Redefining Success in Vocational Technical Education.* **Washington, DC: Education Writers Association** *and* **William T. Grant Foundation Commission on Youth and America's Future, 1992.**

Introduction

The Education Writers Association has performed a significant service in focusing public attention on several dimensions of effective vocational technical education. In this brief collection of case studies we learn how vocational high schools are responding to the rising demands of a rapidly changing workforce. We sense high levels of student and faculty excitement and energy as rigorous academic instruction is blended with skill training for promising careers. We visit schools that are moving toward realization of the Congressional mandate, under the Carl D. Perkins Vocational and Applied Technology Education Act of 1990, to integrate challenging academics with broad-based skill development in an industry, rather than narrowly for a specific job. We see new linkages between schools, employers and their communities. We encounter schools encouraging their students to explore options for postsecondary education and to develop essential habits of lifelong learning. And, perhaps most encouraging, we find persuasive evidence that sound schooling, preparation for employment, community development, and comprehensive youth development each have much to contribute to the success of the others.

Cooperative learning, team teaching, viewing students as responsible and productive workers, "hands-on" or experiential learning, individually-paced instruction, performance-based assessment, close linkages between employers and schools have long been essential features of good vocational education. Today, those concepts and practices may properly be viewed as universally applicable to *all* instruction and *all* students. Based on years of cognitive research and millions of dollars invested in curriculum development, we now have validation of the old observation that "the way to students' minds is through their hands." Indeed, as several of these case studies suggest, well-prepared vocational technical education students can outperform their peers in the "general track" and may challenge the traditional "collegiate track" on standardized tests of academic subject matter.

Thanks are extended to the national policy organizations that have joined together to co-publish this report and to make it available to their constituents. In this way, we hope, what are now local demonstrations offering inspiration and example may blossom into a powerful, nationwide movement to improve secondary education in the United States.

Samuel Halperin
William T. Grant Foundation
Commission on Youth and
America's Future

REPORTS ON EDUCATION AND EMPLOYMENT from the Education Writers Association

- **First Jobs** examines how young workers fare in their first jobs: how they find jobs, the support they receive from family, friends and the community, and their views of the future. Focusing on Salinas, Calif., Detroit, Mich., Birmingham, Ala., Lawrence, Mass., and several small towns in Iowa, the report also reviews state and community indicators of youth employment. April 1990. 42 pages; $10 prepaid.

- In **Training for Work: What the U.S. Can Learn from Europe,** reporters look at apprenticeship and other school-to-work transition and retraining programs in Germany, Sweden and England. The report includes a summary of their findings, and reproduces articles originally published by their newspapers and magazines. December 1990. 48 pages; $5 prepaid.

- Are the federal JOBS program and other workplace literacy efforts helping people gain the skills and employment they need? **Is the Story Literacy, Decent Jobs or Political Will?** asks this question, looking at programs in San Diego, Akron, Belle Glade, Fla., Tucson, Laurel, Miss. and Westchester County, N.Y. April 1991. 54 pages; $10 prepaid.

- **Listening to Mothers' Voices** explores why low educational achievement persists in poor families, finding that trying to survive greatly outweighs the goals of traditional schooling. Based on extensive interviews with mothers of school-age children in Appalachia, inner city Baltimore, Portland, Charleston, S.C., and Dallas. April 1992. 38 pages; $10 prepaid.

- **Backbeats,** a compilation of back issues of **The Literacy Beat** newsletter, takes the reader beyond tutoring programs and learning to read, to the reason why adults have literacy problems and how policies affect their improving their skills. Topics include workplace literacy, employers' training responsibilities, changes in welfare policy, the military as employer, and many others. 1987–1991. 76 pages; $12 prepaid.

The Education Writers Association (EWA) is the professional association for reporters and other writers who cover education. For more information, contact EWA at 1001 Connecticut Avenue N.W., Washington, D.C. 20036; phone (202) 429-9680; fax (202) 872-4016.

Overview:
Making School Work for All Students

by Linda Chion-Kenney

Something is happening to change high schools in the United States. Not everywhere and not for everybody. But there are major efforts to beef up coursework for both college-bound and work-bound youth by exporting hands-on methods from voc-ed for students who are college-bound and importing basic and advanced academic content for vocational students.

What is needed, some educators say, is a marriage—not a sibling rivalry—between academic and vocational education; between theory and practice; between using your mind and testing your talents in both chalk-and-talk and hands-on learning environments.

That is a far cry from the norm in schools today.

"People for years have said vocational education is wonderful because of the pedagogical approaches: students do projects, they work with things, they're not necessarily after the 'right answer,' there's all kinds of problem-solving, and it's so active," said Jeannie Oakes, a professor in the Graduate School of Education at the University of California, Los Angeles. "And yet we don't think to say: 'Maybe the academic side could learn from this,' because vocational education is seen as second class. There's a status thing about it that comes largely from the kids."

But not only from the kids.

The barrier between academic and vocational education is an artificial one, often expressed as the difference between learning for the sake of learning and learning for a purpose, said Gene Bottoms, director of the Southern Regional Education Board's (SREB) State Vocational Education Consortium.

"In our country," he said, "we insist that our brightest students—those in the college preparatory curriculum—pursue a well-defined, structured program of study with few options. However, the students most in need of structure—students in the general and vocational curricula—are provided with the least. The result is that these students wander through a 'cafeteria' curriculum of endless choices in which too many spend too much time at the dessert table."

What is sorely lacking are incentives to change, according to many people interviewed. And this means teachers and administrators alike.

Based on data from Consortium communities, Bottoms describes a lack of consensus across sites and within sites as to the purpose of schooling. Only about half of the teachers see the purpose of vocational schooling as a learning system. About a third say the purpose of vocational education is to train students for entry-level jobs, and the remainder see it as a spot for students who can't make it in the general or academic curriculum. The SREB believes that a consensus must exist among personnel that the purpose of secondary vocational education is to prepare youth with the ability to continue to learn in either a work or educational setting.

Getting From Here to There

The means to that end is not just a matter of adding courses or counselors. What's needed, experts say, is the rebuilding of the infrastructure of education, from curriculum, to pedagogy, to assessment, to perceptions and expectations.

"There isn't just one thing that we have to do," said Stephen F. Hamilton, author of *Apprenticeship for Adulthood: Preparing Youth for the Future*. There are "a lot of different ways we can achieve this goal of helping students move smoothly from school to challenging jobs. It's keeping our eyes on the goal that's important, because in the past it's pretty much just been ignored."

Unfortunately, for the great majority of youth in America, education grounded in real-life applications still is, if not ignored, then given short shrift. Many vocational education programs remain largely segregated from the academic mainstream, following antiquated models of "shop."

Vocational education also is generally left out of school reform because it's too complicated, according to Larry Rosenstock, director of Rindge School of Technical Arts in Cambridge, Mass. "That's why," he said, "you have this 100-year-old project out there with no movement."

But, today, good vocational education makes use of all of the changes in teaching that are on the cutting edge of reform—team teaching, cooperative learning, alternative means of assessment, experiential learning, applied learning, and addressing multiple intelligences. In these exemplary programs, narrow-skill focus and shop learning is a thing of the past.

This is a report on these exemplary efforts. For example:

- In 1987, Bottoms and the Southern Regional Education Board formed a consortium of states in the South to add rigor and purpose to schooling for the "forgotten half." Today, with 48 sites in 18 states, Bottoms points to results that show that all high school students can excel in math, science and problem-solving. As a group, vocational students in consortium schools scored higher in reading than similar students nationwide, and their mathematics achievement was significantly higher. In both areas, they matched or exceeded achievement of general curriculum students in both public and private schools.

- In the summer of 1991, the Center for Occupational Research and Development (CORD) in Waco, Tex. launched a National Tech Prep Network to develop national standards of quality for so-called 2 + 2 Tech Prep programs. These programs link a planned sequence of courses in high school with studies in community or technical colleges, ending with at least an associate degree. The emphasis is usually on math, science, and communication skills, and the aim is to prepare students for entry into mid-level technological careers. More than 700 tech prep programs in 47 states have joined a national clearinghouse.

- With a consortium of state vocational agencies, employers and educators, CORD developed coursework that blends academic knowledge with workplace realities. Courses include: Principles of Technology (physics in the workplace), Applied Mathematics (arithmetic through algebra, trigonometry, probability and statistics in a work context), Applied Communications, and Applied Biology/Chemistry (blends the two in work applications). Most of the SREB sites use these courses.

- Academies—schools within schools that focus on a vertical segment of careers in a vocational area—are having a rebirth. Started in Philadelphia in 1969, the academy idea moved to California in 1982 with the creation of "Peninsula Academies." Because of their success, the legislature began academies at 10 high schools three years later and today, the state is expected to develop at least 200 academies. New York's Academy of Finance, started by Shearson Lehman Hutton in 1982, spread to 51 schools by 1992. Following on the success of the Academy of Finance and a spinoff, the Academy of Travel and Tourism in Miami, American Express, Shearson and other companies have formed the National Academy Foundation.

- The National Center on Education and the Economy's Commission on the Skills of the American Workforce examined programs in this country and those in Japan, Ireland, Germany, Sweden and other industrialized nations. Its report, *America's Choice: High Skills or Low Wages!*, recommended national goals and performance-based standards for education and called for students to be required to earn a "certificate of initial mastery" before advancing to a college-preparatory or technical/professional course of study. Youth under age 18 would have to earn this certificate before getting a job. Oregon and Wisconsin have passed legislation based on the report's recommendations and several other states are formally studying them. A summary of these efforts can be found in the W.T. Grant Commission's *States and Communities on the Move: Policy Initiatives to create a World-Class Workforce.*

- Stephen F. Hamilton, a professor at Cornell University, is working with five school systems in Broome County, N.Y., on a small-scale project to see how learning in the workplace occurs and how that can be connected to school learning. Programs like cooperative education have demonstrated their values in preparing youth for work, both directly and indirectly, by motivating better school performance, but they reach too few students and are not connected to the labor market, he believes. He is attempting to expand these programs to include more young people and to develop a system that moves an individual from career exploration and exposure to more job-focused apprenticeships, such as those in Germany.

- The U.S. Department of Labor, Massachusetts-based Jobs for the Future (JFF), and the Council of Chief State School Officers (CCSSO) all have pilot apprenticeship efforts underway in several states. Two of the programs profiled here—Rindge School of Technical Arts and Oakland's Health and Bioscience Academy are part of JFF's 10 site National youth Apprenticeship Initiative. CCSSO will fund five states to expand apprenticeship efforts. An earlier program funded 10 states to "design" programs.

- Vocational schools have joined the Coalition of Essential Schools through the Re:Learning project, entering the mainstream of education reform, as well. New Castle County, Del.'s Hodgson school and four others have signed up to adopt CES' nine principles and develop a true intellectual focus for their learning environment—a far cry from most stereotypical views of vocational education.

- The Center for Law and Education, with foundation funding, has begun an effort to help low-income students and communities redirect vocational education programs to better meet their needs for education, employment, and community development. The Vocational Opportunity for Community and Education Development (VOCED) aims much broader than

preparation for work. Concerned about what happens to communities in times of economic stress, the program helps students think about their communities' unmet needs and ways they can affect resources and capital in their communities.

These efforts coincide with major reforms in federal legislation. In 1990, the Carl D. Perkins Vocational and Applied Technology Education Act codified many of the principles experts think are needed in vocational education. It required that vocational programs integrate academics and move from narrow, skill-based training for specific occupations to a broad experience and understanding of all aspects of an industry. It provided opportunities for linkages with community economic development. To vocational education, the Perkin's Act changes can be seen as a challenge. It lets reformers move forward, according to Rindge's Rosenstock. He hopes that when others see what can be done, they will follow on.

Criteria for a Systemic Approach

Two years ago, the Education Writers Association documented the problems faced by young people searching for jobs and livelihoods to sustain their futures in *First Jobs: Young Workers in a Changing Economy*. With few skills and no organized programs to help, most found themselves lost in low wage jobs, many dependent on their parents.

This dismal outlook led EWA and many others to look to lessons that could be learned from countries in Europe, including Germany's apprenticeship program and efforts at upgrading vocational preparation in Denmark, Great Britain and other countries. The strengths of these programs—their high quality training, certification of skills and universality—were summarized in EWA's report, *Training for Work: What the U.S. Can Learn from Europe;* and in Joseph McKenna's January 20, 1992 profile in *Industry Week*.

In Fall 1991, with changes in the Perkins Act, the SREB consortium, the National Tech Prep Network, the Center for Law and Education's VOCED project and many other efforts to change schools for non-college-bound students, EWA's attention was drawn to programs here at home.

This report describes what reporters found. Based on interviews with educators, researchers, policymakers, and business and association representatives, reporter Linda Chion-Kenney drew up a list of essential components for programs to bridge the worlds of learning, earning, and adulthood for all students. EWA then asked experts to help identify schools that fit the criteria.

Schools were visited if:

- they had the same high goals and expectations for students heading to work as students striving for four-year college degrees,
- teachers, employers, postsecondary instructors, and others worked together to expand the four walls of the classroom to the community at large,
- employers, community leaders and providers worked together to revamp not only the rules, roles, and relationships that govern schools, but also what students are taught, how they learn, the schedules and "space" that they work in,
- barriers were eliminated between academic (theoretical) and vocational (hands-on) disciplines; between teachers who have historically prepared students "to think and learn" and those who have historically prepared students to "carry out procedures," and
- students could see that what they learned was connected to what they do and aspire to be in "real life," and to what they experience on the job and in other classes throughout their school years.

The sites visited by reporters included:

- **Health and Bioscience Academy,** a school within a school at Oakland Technical High School, which recruits economically and educationally impoverished students into a program of study that honor roll students scramble to get into. The academy is one of 10 sites recently selected to receive funding from the National Youth Apprenticeship Initiative of Jobs for the Future, a nonprofit organization specializing in workforce preparation and economic development. The academy maintains a 96 percent attendance rate, and more than 80 percent of its graduates meet the entrance requirements of the University of California system, compared with less than 20 percent of the Oakland School District's graduates.
- **New Castle County, Del., and Paul M. Hodgson Vocational-Technical High School,** part of the Re:Learning project and the SREB consortium, the school helps students see meaning in what they learn and do. Students begin in ninth grade to prepare a senior project. As a requirement of graduation, they must develop the project, write about it and present it to a panel of business representatives. Coursework and shopwork are tied to the project throughout the school years.
- **Rockbridge High School, Va.,** a small, rural school serving a blue-collar community, eliminated the general education track, ability grouping and 'soft' electives—everything they could do to make classwork more rigorous. Part of the SREB vocational education consortium, Rockbridge worried that everything they did would increase the dropout rate, but

just the opposite happened. Based on National Assessment of Educational Progress tests in math, communications, and science, Rockbridge was named one of the top eight performing sites in the SREB consortium.

- **Rindge School of Technical Arts, Cambridge, Mass.,** a school within the 2,400-student Cambridge Rindge and Latin School, personalizes instruction for students at risk of getting lost in a large urban high school, and connects learning to the world at large. Students use Cambridge as their "text," creating oral histories, portfolios, photographs, artwork, three-dimensional models, and maps to depict life as it is. Students will assess the problems of the community and will work to put their ideas in place. Rindge is part of the National Youth Apprenticeship Initiative of Jobs for the Future and is a model site for the Center for Law and Education's Vocational Opportunity for Community and Educational Development project.

Each of the schools is engaged in changing how students, parents, teachers, and policymakers think about youth not bound immediately for college and their needs. They are not what is commonly thought of as "traditional" vocational preparation. One school hopes to engage students as actors in their own community, examining their neighborhoods, looking at architecture, assessing community problems and identifying solutions. Another has students creating projects of their own making, challenging common stereotypes of vocational preparation with research and writing. One school offers high quality education preparing students for a range of health careers, including becoming a doctor, in a district where such education is hard to come by.

Efforts have been made to make the classes small and personal. In some instances, as in Oakland, the program is designed for students at risk of failure, although others fight to get into it. The personal attention, focus on goals and real life experiences, and efforts of a strong leader have made attendance near perfect and improved student achievement and aspirations.

Staff in the programs have struggled with integrating academics and technical learning; in one site, the director admits that students and faculty still question their direction. But in the reporters' stories it is possible to see how the integration of theory and practice can create a strong curriculum and how it might work elsewhere.

Each school is involved in the community and is building partnerships with employers and others. In some, the partnerships are broad—with colleges and businesses, networks and consortium—and the aim at change is no different than what might be observed in schools designed for college-bound youngsters.

This may be the major lesson. That is, the reforms that work for students are ones that tailor the program, the teaching styles, the applications to their interests—that link real world and theory, life and work, students and workers, young people and adults.

These programs appear to be on the cutting edge and may be representative of many others working in communities across the country to change the futures of students. They will face many challenges in their efforts to institutionalize the changes they have begun. As this report was written, at least one of the schools faces consolidation with other high schools and perhaps a challenge to its program. And the others are highly dependent on strong leaders.

Finally, these four schools are single programs. They alone do not amount to a "system" for school-to-work and school-to-adulthood preparation.

But what happens to these schools and what they pass on to others in the future is well worth watching.

At-a-Glance:

Health and Bioscience Academy

The Health and Bioscience Academy, founded in 1985 as the Health Academy, is a school within the 1,650-student Oakland Technical High School. The school serves an inner-city student population that is 69 percent Afro-American, 22 percent Southeast Asian, 6 percent Caucasian and 3 percent Hispanic. Forty-five percent of the students qualify for Aid to Families with Dependent Children. As a magnet program, the academy's 175-student population reflects the same ethnic balance. The academy accepts students of all abilities, but the emphasis is on taking students with a past performance of under-achievement and poor attendance.

According to a report written by David Stern under contract with the U.S. Department of Education, the current wave of academies began in Philadelphia in 1969. In 1981, two vocational academies, based on the Philadelphia model, opened in California and were called the "Peninsula Academies." Based on their success, the California legislature sponsored replications of the academy at 10 other high schools beginning in 1985. The Oakland Academy is one of these "Partnership Academies."

Oakland's Health and Bioscience Academy: Heavy on Science and Experience for 'Disenchanted' Students

by Jacqueline Cutler, *Oakland Tribune*

Anthony Moore, a burly senior at Oakland Technical High School's Health and Bioscience Academy in California, peered into a microscope with the intensity of a scientist confirming a great discovery. Wearing a threadbare T-shirt on a cold day, he reached for a nub of a pencil with a worn eraser and began calculating the number of red blood cells coursing through capillaries in a goldfish's tail.

Although the lab was noisy, students chatted only about the assignment. They worked together, one squeezing water from an eyedropper on the fish to keep it moist, another looking through a microscope and calling out upon finding the tiny red dots. These are Oakland teenagers, supposedly the "baddest" kids in the San Francisco Bay Area. Yet there they were in a laboratory, clearly jazzed about a goldfish's circulatory system.

That's the sort of magic that goes on inside the Health and Bioscience Academy, the flagship of the Oakland Unified School District's eight high schools within a high school. Teachers rattle off personal tales about their students' lives, students tell of working harder than they ever have and of getting support from their teachers. Although it receives scant administrative support from the district, the Health Academy is among the top in the state, said education consultants who have studied academies.

"It's an excellent academy, as good as any we looked at," said Charlie Dayton, an independent consultant on educational issues and the former director of the Sequoia Academies, California's first such schools.

The Health and Bioscience Academy, started in 1985, was based on the Sequoia Academy, Houston's Health Academy and the 1969 pilot program in Philadelphia. Intended to catch students at risk of dropping out, the Health Academy exposes students to health careers, nurturing their expressed interest in medical fields. Interest in a health career is the main entrance requirement.

Started when Oakland was graduating seniors with less than ninth-grade skills, the Health Academy's purpose is to graduate students ready for the workforce and those who are better prepared to continue their educations. By all accounts, the academy is a success.

The district is so pleased with the Health and Bioscience Academy, it has created academies in computers and health technology, media and mass communications, business and international finance, law and government, visual arts, pre-engineering, and performing arts.

"The traditional way of labeling vocational programs is not what these programs are designed to do," said Allie Gordon-Whitehurst, program manager for Oakland's magnet programs. "We see these programs as vehicles to move students into employment after high school and into postsecondary education."

The academy relies on team teaching to link curriculum. When students learn about hand-washing techniques in biology lab classes, they're assigned a short story on bacteria in English class, and the history lesson will focus on an epidemic. The 175 students are scheduled in blocks, giving them a separate identity from the 1,650 students at Oakland Technical High School. Still, the academy is well within the monolithic school, where campus supervisors patrol hallways and speak into walkie-talkies. Students take some classes with the general student population, and some instructors assigned to the academy also teach regular classes.

Engaged Students

There's an excitement bubbling in Health Academy classes. Much of this stems from a sense of community that students in urban districts usually lack. Students talk to their teachers about far more than assignments.

"Teachers get more involved," said Ashanti Taylor, a senior. "It's more personal. If we need any help, they are there for us."

Academy students fulfill the general high school requirements and take twice the amount of science courses, with a heavy emphasis on biological sciences. They also receive tutoring from students at the University of California at Berkeley, students get help with the SATs, have teachers dogging them about classwork and receive additional help in applying to colleges. And they get the Health Academy perks—internships, mentors, and field trips.

If students attain a C average and have an 80 percent on-time attendance rate, they earn an internship at local hospitals between their junior and senior years, often leading to a part-time job during senior year.

Classes are supposed to be capped at 26 students, five fewer than the maximum allowed in Oakland. But the reality is about 30 students per class. However, any class with at least 30 students has Berkeley college students sitting in as tutors.

The academy also brings in experts to train students in CPR, first aid, medical laboratory techniques and AIDS education. Professors from nearby colleges give lectures. The teenagers tour hospitals and clinics. Many upperclassmen are still raving about how great it was to see cadavers last spring at a college of chiropractic medicine. Sophomores are already fired up over the upcoming field trip.

"This spring we are supposed to see cadavers and I can't wait," said Rohana Moore, a 10th grader who wants to be a pediatric nurse. (Rohana is the sister of Anthony, a senior at the academy. It's not uncommon for siblings to attend the same academy because when one does well, parents often enroll their other children.)

Not all field trips are related to the medical field. Students recently crossed the bay to San Francisco to see the play "The Piano Lesson." While some may question just how culture fits into this curriculum, teachers explain they are intent on exposing their students to life beyond their Oakland neighborhoods.

The main reason the Health Academy works, said scores of students, teachers and the experts, is Patricia Clark, the academy's founding director and English teacher.

"Pat Clark is not the norm. She's an extraordinary person," said David Stern, a professor of education at the University of California at Berkeley's Graduate School of Education, who monitored the academy for a few years. "She's an extraordinary mind and has found a vehicle for her talents."

Personal Attention

Parents appreciate the additional attention and real-life experiences their children receive. Kenneth Harris, whose son Joel is an academy student, said, "I think one of the main good things about it is they get some practical aspect to book learning. . . . [And] we are getting more things from school. They call you to say the report cards are coming. Every year we've met with his teachers, and I talk some to Miss Clark."

Talking with Clark is not unlike running a marathon in high heels. Catching up with her is tough, and every question leads to anecdotes about her kids. She knows them well enough to sound like everyone's favorite aunt. Said Joel Harris: "Miss Clark called my house and would ask about personal problems." Clark is often exhausted from faxing college recommendation letters in the middle of the night, writing grants to get more money for the academy, meeting with potential employers for her students, and in between, teaching classes.

A frenetic, off-beat teacher, Clark, 46, was lured from working as the hostess on an educational cruise ship to return to teaching when the Health Academy was born, shortly after the state created the California Academic Partnership Program.

The program, designed for students historically under-represented in postsecondary schools, requires academy students to be selected in the second semester of ninth grade. The Health Academy makes a few exceptions annually by bringing in ninth graders. Under the state guidelines, all prospective academy students must be considered at risk of dropping out by meeting three of four criteria: a record of irregular attendance, a record of underachievement by being at least a year below grade level, a record of low motivation or disinterest in regular school, and poverty.

In Oakland, where 52 percent of the 52,000 students' families report being on welfare—and administrators reckon the actual number is higher—most students fall within the state's requirements of being at risk. "At risk" is a label Clark has trouble even uttering. Instead, she prefers to say that these "disenchanted" students have "high potential".

"I've always had the kids other teachers haven't wanted," she said. "They've always been best for me. It's the challenge. There's something about traditional American education, that the students who are rejecting it are the brightest, and I have empathy for them."

Clark and Gordon-Whitehurst, the magnet program director, recruit ninth graders during the spring. A student's professed interest and parental consent are the admission requirements. So far, the Health Academy hasn't had to deny any students admission, Clark said.

"The difference in Oakland is the luxury of being able to say the primary criteria for being in the program is interest," she said. "The whole idea of the academy is exactly what's needed, especially in an urban district because you don't have the small-town sense of family, where someone will tell your mother you did something wrong. For students to have a strong sense of family is so important. [Academy] students call themselves 'The Family,' and that's

so important because it breaks down barriers between students and teachers."

Clark recalled that when she was involved in helping to plan the academy, "Oakland was so demoralized at the time. So many teachers said to me, 'Why are you working so hard? It won't work because nothing lasts in Oakland.' "

The beleaguered district, which teetered on the edge of bankruptcy two years ago, had nine superintendents during the 1980s. It is often described as the most political in the state. Once a superintendent in Oakland was assassinated for wanting to issue students identification cards.

Given the in-fighting over seemingly mundane issues, it may not be the sort of district where education reforms are expected to flourish. The district's now on a more even keel, and its finances were reined in under the stewardship of Superintendent Pete Mesa, who arrived two years ago.

Still, Oakland is hardly a place where teachers and students feel safe. During the first semester of the 1991–92 year, police were summoned to campuses 3,708 times and seized 45 weapons from school grounds, said Youth Services Sgt. Harold Boutte.

The academy reflects a district where 57.3 percent of the students are black, 18.3 percent are Asian, 15 percent are Hispanic and 8.8 percent are white. Add that 82 different languages are spoken in the city—and 24 percent of the students speak limited English—and it's not difficult to figure out why more than 400 teachers left the district last year for nearby suburbs.

None of this daunts Clark. Her main gripe is the institutionalized racism her students face. "Even with entry-level jobs, some of what you are dealing with is racism," she said. "Especially in something as people-sensitive and stressful as health, the attitude becomes very important. Students are dealing with so much in their personal lives. They come from having listened to gunshots during the night. It's much harder to let go of that in a working situation, and they [the hospital personnel] don't have time to deal with sensitivities."

"This way," Clark said of the academy approach, "[students] hear about expectations that they can be successful. Through a series of field trips, field experiences, and volunteering in hospitals and turning that into summer jobs, by the time they graduate, they will have spent a couple of years in the hospital. Everybody's working on it as partners."

The daughter of a nurse and a teacher, Clark was uniquely suited to this job. She is joined at the academy this year by a co-director, Allen Graubard. He used to teach philosophy at the Massachusetts Institute of Technology, then returned to school to earn a degree in epidemiology. After spending a year writing grants for the district, Graubard wanted to work in the classroom. He teaches algebra, geometry, and conceptual physics and is certified to teach biology, chemistry, social studies, and history.

"This is close to what I've always been supportive of—alternative schools," Graubard said. "It's small units, with spirit and its own staff. It works better than the shopping-mall version of high schools for intangible reasons [such as] the quality of the relationships between the teachers and the students. It's easy to do really good curriculum, but it won't work unless you have a deeper understanding with the students."

The major flaw with the Health Academy, Graubard said, is a lack of autonomy from the school district. Other teachers in the program—there are eight including Graubard and Clark—bemoan there's no common preparation period. Called for in the models, common prep periods give teachers time to plan how to link their lessons. This year, it was not included in their schedules. Trying to make up for the bureaucratic mistake, teachers meet every couple of weeks over meals and call each other regularly.

Graubard, as many, faulted the district for not giving the academy enough clerical and administrative support. Another problem, many conceded, is that academy teachers do not receive any specialized training.

"Just working in a team is fundamentally different," said Stern. "Most teacher training programs don't include what academy teachers have to learn."

This summer, the National Center for Research in Vocational Education plans to offer institutes for teachers involved in vocational education, he said.

Dayton, who has taught in and analyzed academies, said such programs "require teachers to work together in different ways. Teachers are very independent. They are kind of kings of their classrooms. Academies require them to work together and in management roles and developing the school-within-a-school structure so the program has an identity. They need block scheduling and a common preparation period. If those components can't be put in place, you begin to tear away at the heart of the program."

In Spite of the District

Additional glaring flaws in the academies were found by the University-Oakland Metropolitan Forum, a partnership between universities and the community, which recently completed an evaluation for the city. Oakland's Redevelopment Agency gave the academies $1.2 million over three years, beginning with the last school year, and hired the Forum to evaluate how the academies are working.

The evaluation found much to praise, lauding academies as "an important innovation in American high schools: the integration of career experience and the teaching of academic subjects. Two of Oakland's academies, health and media, were among the first of their kind in the state and the nation, while others were designated more recently through the redesign of other district curricula."

However, the evaluation, released in mid-January, also found the district did not use the city's grant in a timely manner and delayed basic goals of writing curricula to help institutionalize programs.

Because of the Redevelopment Agency's requirements, academy teachers are now writing curricula to ensure that courses are institutionalized. Until now, much of the Health Academy's curriculum hinged on Clark. Graubard acknowledged: "If Pat left, there would be a serious problem because so much is in her head."

The Forum's evaluation also faulted the district for keeping inadequate records on students and graduates. There was no hard data on what graduates were doing. Additional problems cited in the evaluation were an insufficient number of teachers assigned to the academies and inadequate planning time for academy teachers. Private industry liaisons, who arrange internships and mentors, were not hired. At the Health Academy, industry liaison Gilberto Conchez has been working—for free. He has already lined up 45 mentors for the spring semester.

The evaluation noted the district does not acquire equipment for the academies promptly, and sometimes equipment needs to be changed by the time the district gets around to filling the orders. But improvements are occurring because of administrative requirements attached to the Redevelopment Agency money.

"The district has recognized the administrative shortcomings and developed a more detailed management plan for the 1991–92 school year," according to the forum's evaluation. "Goals, objectives, responsibilities, outcome measures, and schedules have all been written, distributed, and are more widely understood than they were last year. The lines of authority have been clarified and stressed at high level staff meetings."

Despite the problems, Victor Rubin, executive director of the University-Oakland Metropolitan Forum, said he's yet to hear negative reaction to the academies from the community.

"I don't hear anybody skeptical or objecting to it," Rubin said. "I think businesses have several goals. A lot of the health-care providers in Oakland are less concerned about whether someone comes out of high school with specific job-related skills than they are with people who come out of high school with a good, solid education. So in that respect, they are happy with the academy. But they are not really happy with the school district as a whole. It is not as if it's answering the employer's labor needs."

Risks of Being Close

The idea behind the Redevelopment Agency investing $1.2 million into the academies was that students would be trained to work in jobs in Oakland's redevelopment area, which is basically all of downtown. That, said Councilman Wilson J. Riles, Jr., could be the sole risk in the entire concept of businesses teaming up with schools.

"There's more opportunities for bad things to happen with academies," Riles said. "The risk of corporations trying to control curriculum, that the kids would be inappropriately forced into vocational programs. It's less of a risk with the health academies than with the other academies."

Rubin concurred that the Health Academy is not in danger. "They are very successful," he said. "They have the most extensive and best-used networks of colleges I've seen."

Tapping the community's resources by bringing college students and professionals into the classrooms and teenagers into the work place is basic to the academy's philosophy. The emphasis on one field of study applicable in the working world is what Alan Weisberg pushed for when he wrote the grant to start the Health Academy. Weisberg was already trying to link businesses and schools through the now-defunct Oakland Alliance. He brought in executives from major Oakland corporations such as Clorox and Kaiser Permanente Medical Center.

"We got everyone to agree to offer jobs to graduates if they had certain success at school," Weisberg recalled. "The actual follow-through with jobs was not a great success."

Regardless, Weisberg said, the academy filled a huge void. "The academy was needed for kids who didn't have a clear vision of what they want." Further, he added, "It's a good way of reorganizing a high school. It's a way to break down the larger high school, and it's a way to integrate vocational and academic education. I am real, real pleased. It's one of the few reforms in high schools to have taken hold."

The academy model is so logical that in interviews with more than 40 people involved with various stages of the Health Academy, no one criticized the concept.

Dayton, who fashioned the Sequoia Academies after the 1969 Philadelphia model, said academies

work only "if they are well-implemented. There is a great deal of variability from site to site. Where it was faithfully replicated, the programs did well."

Dayton, Stern, Weisberg, and John Evans, an analyst, studied nine academies in California for Policy Analysis for California Education (PACE) during the 1986–87 school year. In their evaluation, they found Health Academy students had better attendance, better grades, and better retention than their classmates at Oakland Technical High School.

Health Academy students' attendance remains at about 98 percent, Clark said. This is far better than the 86 percent attendance rate for high school students districtwide. And the Forum's evaluation showed academy students continue to do better academically, albeit slightly, than the average for the high school.

Comparisons of the spring 1991 Comprehensive Test of Basic Skills between Oakland Technical High School students and Health Academy students found: the 10th grade median in reading was 43 percent; language, 51 percent; and math, 53 percent; compared, respectively, with academy students, 52.5 percent, 54 percent, and 55 percent.

Students attribute their success to being in smaller classes that mean something to them.

"You receive a science program that's more than the core classes," Moore said when he finished counting the goldfish's red blood cells. "You go on a lot of field trips and the teachers go out of their way to help you out."

His classmate Harris, who wants to be a general practitioner, now works at Kaiser Permanente Medical Center-Oakland, earning $12.37 an hour in a union clerical job. The academy is different from the classes Harris attended through junior high because, he said, "you make more close relationships with the kids. There are better friendships. We go to each other's houses. It's more personal. I've had most of my teachers three years in a row."

Unlike most of his classmates, who said their grades improved since being in the academy because they are working harder, Harris always maintained a B-plus average. "I don't have to study more but I actually learn more because the classes are more interesting. It's more hands-on."

Calvin Henderson, a junior who aspires to be an orthopedic surgeon, said simply of his class work: "It's more meaningful."

As did most of his classmates, Henderson rated the lab classes as the best part, and the amount of homework as the worst. Neither is an accident.

Veteran biology teacher Patricia Bayonne-Johnson said she always knew the way to students' minds was through their hands—giving them enough experiments to turn them on to the wonders of biology.

Bayonne-Johnson, who also teaches regular classes at the high school, said the primary difference between regular students and academy students is attendance. In the academy, she said, "it's better from day one. I think they feel special. Classes are smaller, and they know they are in a special program. They feel chosen."

Physiology teacher David de Leewu's first teaching job was at the academy. He's worked there for five years. A former warehouse union organizer, de Leewu said: "I've dealt with these kids as peers rather than as students."

Real Life

He also encourages them to conduct experiments with real applications. Last year, a student who had initially been a borderline student decided to find out whether hair relaxers used to straighten hair cause any damage. Rigging a scale with pennies to weigh when hair breaks after applying different chemicals, she proved relaxers weaken hair. She took first place in a science contest with 150 entries.

De Leewu wanted to teach at the academy because he was a product of schools similar to Oakland. He wanted to write curriculum, and, he said, "I wanted to see my students after they graduate."

He regularly sees the rewards of teaching science. "Many of these kids would not have gone to college, period," he said. "It's hard to come up with firm numbers. A lot of these kids would not consider going to college. They go off phenomenally well-prepared in bioscience. They really do know a lot. We have kids who were failing ninth grade now in AP biology. Even our least academically with-it kids go off knowing more than 90 percent of American kids do about that subject matter."

The grounding in science helps students in their internships and summer jobs because they're already more knowledgeable than other teens looking for similar posts. Hospital personnel who have worked with academy students said the benefits of the partnership are mutual.

Local clinics, such as the West Oakland Health Center, placed 15 students last summer, paid through the academy's Redevelopment Agency grant. "We exposed them to what takes place in a clinical setting," said Gayle Quinn, clinic director of health education. "They are better-prepared because they have an interest in health. Their motivation, in addition to having a chance to earn an income, is a good match."

Barbara Schaaf, coordinator of volunteer services at Children's Hospital, said: "We have an obligation to the community to provide some exposure to health care. The growth in health care in the Bay Area is expected to be 27 percent before 2005. It's also for our own selfish interests to give exposure. We need to have things done. We don't let students work with patients. We give them task-oriented jobs. It gives them an opportunity to learn basic job skills, to be on time."

Jacquee Costain, executive director of Career Training Institute in Oakland, teaches academy students how to narrow their career focus, data entry, and how to behave at work.

"The Health Academy provides extra science courses for them," Costain said. "Because of my background in job training and placement, I knew if they didn't know what they would be studying they would waste a whole lot of money. I made them think about which jobs to select and how does it pay."

Working with 10 students, Costain taught them about hospital careers from the chief executive officer to technician, and explained what each department does. She then worked with local hospitals to get her charges placed on information desks to apply their newfound knowledge and learn to deal with doctors, patients and visiting relatives. The same 10 students will soon embark on a new program, where doctors will take them on rounds.

"These are the realities," Costain said. "All of the science classes they got did not prepare them for what they are doing now. They will go with doctors on rounds and see patients and hear about diagnoses. They will talk about anatomy."

Lily Mow, assistant professor of nursing at Samuel Merritt College of Nursing, has been taking students into college classes for four years and encouraging colleagues to lecture at the academy.

"We let them see it's a friendly environment," she said. She's also writing curriculum on osmosis and diffusion with academy teachers "because it wasn't done well in the science books."

Mow's particularly proud of the progress of senior nursing student Brenda Bueno, an alumna from the Health Academy's first graduating class. Bueno worked at Kaiser Hospital as a summer intern doing paperwork for nurses, and was then hired in the lab. She had a mentor from the nursing college who brought Bueno to nursing classes.

"We got a lot of special attention," Bueno said. "There were smaller classes, and they really push you in terms of exposing you to other people. They look at you not only as a student but also as a person. They will help you out not only academically, but personally."

Students, analysts, and administrators are convinced academies, or other alternatives to the conventional high school, are the wave of the future. "We don't need schools that look like what we have today," said Gordon-Whitehurst, director of Oakland's magnet programs. "I'm not saying the academy model is the only model, but we certainly need schools that prepare students to live and function."

The chief components of the academies' success, David Stern said, are "the integrated or focused curriculum, the small scale, the tie to local employers. Employment is not the be-all and end-all of school, but employers are an important part of the world outside of school. That they are involved makes it important, directly [linking them] to what [students] have been studying in class. It makes everything come together."

Among those who put classroom theory into practice is Ken Jones, a radiology clerical manager at Kaiser. He tries to give students a well-rounded picture of radiology and shows them CAT scans, MRIs, ultrasounds and teaches them how to work in the darkrooms and how to read X-rays.

"Being a product of Oakland public schools myself, I really have a large concern about the youth of Oakland," Jones said. "Because I'm in the health field and we are a community-based hospital, I feel we need to help as many youth as possible because of what they are trying to face. We really need more blacks in the health-care profession. I felt this was something I knew a little about, and however I could get involved, I wanted to give whatever I could."

Jones lost friends to drugs and to the streets and empathizes with what inner-city teens endure. "I can't save all those kids," he said. "Sometimes you need to instill in a person: 'You can make it. You can do it.' If I can help one student to achieve that goal, I will feel that I've had some fulfillment in my life."

LaShone Williams is a student he has helped. She had an internship at Kaiser, and a mentor who introduced her to hospital administrators, because she wanted to become one. Her mentor took her on field trips. "We went to Monterey," Williams said. "I never knew about brunch. She just cultivated me."

Now 20, and a junior at California State University at Hayward, Williams said she began acting out when she was 9 years old when her mother died. The Board of Education gave her a final reprieve before expulsion from ninth grade. Shortly after, Clark came to her class recruiting.

"That's how I got in," Williams said. Once enrolled, "I was more focused. I had more support. It's more of a school within a school. I had someone guiding me. Miss Clark challenged me. She put me in high courses. She gave me the chance. I probably would have been like a lot of people—pregnant, on welfare, the whole thing."

Williams plans to become a pediatrician.

At-a-Glance:

New Castle County Vocational-Technical School District

The New Castle County Vocational Technical School District serves 3,200 students in grades 9-12 and 600 adults from the county of 500,000 people. The vast majority of the 36 percent minority student population is Afro-American. About 30 percent of the area's eighth graders apply to the District's three schools, and 80 percent of them are accepted. These are not shared-site schools. Each school has academic, vocational, and physical education classes and its own sports teams and student and extracurricular activities. Many students come from blue-collar families, and about five percent of the students are classified as gifted and talented on the basis of their IQ levels.

The district offers 41 different career programs in addition to programs for the gifted and talented, students with special needs, and students at risk of dropping out. The district has three high schools: Delcastle Technical High School (1,600 students), Howard Career Center (500 students) and Paul M. Hodgson Vocational-Technical High School (900 students).

New Castle County, Delaware: Senior Projects Provide Anchor for Adulthood

by Vyola P. Willson

Julie Wisniewski made the cover of Andy Warhol's Interview magazine this year—literally—with a self-portrait in the Warhol tradition.

Nathaniel Huggins used $150 of his own money to build his dream house to ¾ inch scale, cutting away the model to show how every jamb, joist, beam, and rafter come together.

Dana Curlett captured on video the columns and capitals, pillars and porches of an antebellum mansion once occupied by a Delaware governor and used them to analyze its architecture.

Lisa Campbell poured a pastel polymer-monomer cocktail into a mold to create a dental retainer, then casually buffed it on a sander as she described the condition it aimed to correct.

These four students are among some 170 seniors at a Delaware vocational school talking their way to their diplomas this year, the second class required to complete a senior project to graduate.

They begin by researching their project, then present a finished product to a panel of teachers at Paul M. Hodgson Vocational-Technical High School in Newark.

Some of the students—the carpentry major who reproduced a museum hutch, the PC whiz who created and killed a computer virus, the future plumber who detailed the evolution of the tank toilet—become instant in-school celebrities. Others who don't test well with pencil and paper have a rare chance to show how much they do know. All share a bond akin to that of U.S. Marine boot camp survivors. Their semester-long projects are part of a larger effort at the school, 20 miles from Wilmington.

Still in its infancy, the effort is aimed at nothing less than changing how students learn and how teachers teach so future seniors will have a better shot at jobs in a marketplace crowded with other teenagers and older, laid-off workers.

"We need to make kids accountable for learning, to make them demonstrate what they know," said Principal Steven H. Godowsky. "Usually they sit in class and they may get a passing grade, but two weeks later, kids don't know what they learned." Teachers, parents, and other administrators credit Godowsky with charging the atmosphere at the 917-student school.

Change at Hodgson has meant trying to connect Pi-in-the-sky classroom math with nuts-and-bolts shop math; allowing teachers to help set policy; putting together teaching teams; and carving up school days in ways that fit tough teaching jobs that can't be crammed into 50-minute periods.

The programs are still evolving, but the school's efforts have attracted visitors from dozens of other schools in the past two years.

Hodgson is getting a little help from its friends in the New Castle Vocational Technical District. Superintendent Dennis L. Loftus has set a heady goal: to turn New Castle into the best vocational district in the nation by 1995–96.

Hodgson is one of three schools in the district, which has its own taxing power and competes with regular high schools for vocational students in a choice system. Each year about 30 percent of all eighth graders in the county apply to the three technical schools. In 1991, nearly 1,100 applied and only 650 were accepted.

Hodgson's sister schools are also changing. Howard Career Center has become one of the most highly computerized schools in the East. Delcastle Technical High School has been focusing on integrating academic and shop studies.

Hodgson has also had some help from the state through Delaware Re:Learning, a program dedicated to changing schools from within.

But the help from all sources has been relatively modest: $86,000 over three years from Delaware Re:Learning; $2,000 from a recent $5.5 million National Science Foundation grant to improve math and science instruction in nine Delaware schools; and some small special projects grants from its district.

The grants have been used to bring teachers, parents, and students together to talk and hear nationally-known speakers and to send them out to gather ideas from other schools.

But the senior project is the centerpiece of the change. Its advocates say students are forced to learn on their own, to learn more from their teachers, and even to teach their classmates and parents.

For example, Lisa Campbell's research paper will be required reading next year, helping to educate dental lab students in the class of 1993.

Dana Curlett's study of Cochran's Grange taught her mother, Beverly, a lot about Georgian architecture as she served as unofficial photographer and official chauffeur on research trips. Beverly Curlett sat in on the presentation. "I wouldn't have missed it for anything," she said.

The projects force students to communicate with adults about their work, a major hurdle for most teenagers in their first jobs. "It does them good to sweat," said one teacher, adding it might help them understand what teachers go through as they stand before classes day after day.

Chilling and Changing

At Hodgson and other vocational schools, change is the order of the day. Educators and business and political leaders are pushing especially hard for beefed-up vocational education, after realizing that one out of four vocational students actually finds a job in his or her field.

"Even the simplest of blue collar jobs—unless they are jobs in fast food places—requires good math skills, communications skills, and reason," said John Burris, who heads the Delaware State Chamber of Commerce. "Those skills have been shoved aside and the student has been encouraged to use manual skills. We need someone who understands designs and drawings, who can communicate to the next work station."

Burris sits on a board of executives and college presidents who have been studying vocational education in the state. "Everybody concluded general track math and English were a cop out," he said. "Businesses have had to spend thousands of dollars to train students in areas they should have been competent in." Colleges are facing the same task with poorly prepared incoming students, said Burris, who gives Loftus credit for trying to meet the problems head on.

The district has joined the Southern Regional Education Board (SREB) to share ideas for change with 48 other schools in 18 states.

"We are trying to put high schools under a microscope to see what they have been providing to 60 to 70 percent of the students who aren't in the college curriculum," said Gene Bottoms, director of SREB's consortium. "Much of it is junk food. The curriculum in high school makes it possible for students to finish school without having to make an effort. You teach them you can achieve a major goal without being challenged or making an extra effort."

Bottoms said there is no doubt Hodgson's senior project challenges students, but in his view Hodgson is just beginning to develop the tougher academic courses students need, a job that takes time. Some schools that started earlier are ahead, he said.

"They are still trapped with the old paradigm that these kids can't do much. They still haven't gone near as far as many sites to strip out all those low-level academic courses and put high-level content into vocational concepts. I do think they will eventually take those steps."

Hodgson's teachers have decided the best way to challenge students is to follow principles proposed by Theodore R. Sizer of Brown University.

Sizer, the author of *Horace's School*, doesn't have a blueprint for the ideal school. Instead, he maintains kids will learn to use their minds if schools simplify; teachers act as coaches, not managers; and students act as workers, earning a diploma by exhibiting mastery over what they have been taught.

Hodgson was an early member of Sizer's Coalition of Essential Schools and its affiliate, Re:Learning, a state and business-funded group pushing reform.

On Re:Learning

Re:Learning is a cooperative effort among the Education Commission of the States (ECS), the Coalition of Essential Schools (CES), and participating states. It aims to redesign schools to better serve all students and to create an environment at the district and state levels that supports and encourages change. More than 350 schools across the country participate in the CES/ReE:Learning project, including the sites in Delaware.

Essential schools believe that the function of every school is to help students use their minds well. Nine common principles guide their work. Among them are that schools should have: an intellectual focus; universal goals that apply to all students; simple goals that encourage students to master a limited number of essential skills and areas of knowledge; and a tone that explicitly and self-consciously stresses unanxious expectation, trust, and decency. Schools personalize teaching and learning, and principals and teachers see themselves as generalists first and specialists second. Diplomas are awarded upon a successful exhibition of mastery. Finally, schools are asked to limit total student loads to 80 or fewer pupils per teacher, set aside substantial time for collective planning by teachers, and agree to limit pupil cost to no greater than 110 percent of costs at traditional schools.

Nine states, including Delaware, have officially adopted and funded Re:Learning projects. Some have been helped by corporations such as Kraft Foods, which has given a $380,000 grant to Delaware Re:Learning to promote reform among the 21 member schools in the state.

Sizer said he is encouraged but realistic about the tiny fraction of the nation's schools in the coalition. "In a growing number of places, they have been able to break through. The youngsters are getting a different kind of experience and flourishing from it. It is easy to talk about reform, hard to do it."

The political climate now favors reform, he said, and state governments pushing for change have made a difference. "The advantage of being in a Re:Learning state is that the attention of the state authorities is to encourage reform, not to smother it."

Coalition membership nationwide has nearly doubled in two years to 120 schools, but Hodgson remains one of only four vocational school members. Two hundred additional schools have applied or are in the process of getting the teacher consensus that is mandatory before a school can join.

Risks and Rewards

Coalition principles are particularly attractive to urban schools.

"They have so little to lose they are more willing to take risks," explained Susan Fisher, a coalition staffer. "If a suburban school is already sending kids to colleges, particularly if they are good colleges, it is less likely to change, although we would argue that those they are sending to college aren't able to think very well," said Fisher.

"The dropout rates are generally high everywhere. Kids are disengaged. The kids who do graduate don't seem well educated."

The New Castle vocational district dropout rate is less than one-third of the state's 6.6 percent rate, but Loftus would like it to be lower. "You have to remember, this is a youngster who left his friends in the eighth grade to pursue an education program in a whole new setting, a little bit more motivated youngster," he said.

The district he heads serves a county of 500,000 with about two-thirds of the Delaware labor force. The business base of the county includes a cluster of bank credit card companies; major DuPont, GM, and Chrysler plants; the University of Delaware; and other colleges, important farming operations, and more than 2,000 small businesses.

Many large plants have announced major layoffs, and smaller satellite businesses have cut back as well. Delaware unemployment has risen from the 3 percent range in the late 1980s to 5.1 percent in 1990 and 6.4 percent in 1991. Meanwhile, teenage unemployment in 1990, the last year for which figures were available, was 12.1 percent—more than twice the overall rate.

One result: layoffs of co-op students from Hodgson and other schools.

Most Hodgson students, roughly 30 percent of them minorities, come from blue- and white-collar areas in the southern part of the county, which grew quickly in the 1980s. About 25 percent of its graduates go on to college. The rest go to work—or try to. "Economic hard times have really hit our district and our school," Godowsky said. "We don't have kids on the upper economic levels. There are a lot of kids at risk."

Hodgson students prepare for careers in 21 fields ranging from cosmetology to carpentry and commercial art, from horticulture to heating and nurse assistant programs. Students must also take academic courses, including math and English, science and history. And this is a surprise to some entering students and their parents.

"A lot of these kids who come to us in the ninth grade have not been successful in school," Godowsky said. "Academics is not their thing. We have to turn that around. "

In the past two years, Godowsky and his faculty have done away with the track system in some academic classes and have emphasized cooperative learning by students in small groups—mirroring what happens in the workplace. Priorities include breaking down the barriers between the academic staff and the vocational staff, between students and teachers, and between good and poor students.

Squirming and Blossoming

The senior project helps.

A minimum of five teachers are involved: an English teacher who oversees and grades the research paper, a vocational teacher-advisor, and three teachers who evaluate the presentation. Students receive grades in English and shop.

The level of individual attention given to a student's project is similar to that given a candidate for a doctoral degree, said Godowsky, himself a Ph.D. from Temple University.

"It puts an unbelievable demand on the system to pull it off," Loftus said. The demand will grow next year, when the Class of 1993 will total 250.

While some students squirm under such focused attention, others blossom. Teachers have been known to squirm and blossom with them, occasionally blurting out answers when a student hesitates

and often looking like proud parents as they videotape presentations.

Lisa Campbell's dental lab teacher, Allan Angel, came out from behind the school camcorder at her presentation to announce he would make her paper required reading for future classes. Nathaniel Huggins' technical drafting teacher, Nicholas Sarro, proudly told of how much interest his model had created in other classes. "He is donating the model to the shop so other students can learn from it," Sarro said.

What about the poor student for whom the project is a struggle from beginning to end?

"Kids who had never had success in writing turned out beautiful papers," said Mary Ann Scarbrough, chair of the English department, who helped switch the senior research project from a dip into literature to a trip into shop. Students are led through the research process and coached for what good and poor students alike find to be the scariest part of the project: talking to adults—a skill they will need in the workplace. "There are really bright kids who won't talk to adults," said English teacher Lynne Rosenfelder.

There are always surprises. Looking for a student to make a presentation to a state conference on short notice, Loftus once stepped into the hallway and chose a student who had a D average.

"She stood up on stage and totally captivated the audience," Loftus said. "She told them, 'I have never been able to take tests and show people what I know. This gave me a chance to do that.'"

Voting Students

When the project requirement was first announced in 1990, a few students threatened to transfer, and that was of more than a passing interest to the teachers. New Castle is a choice district. Students can vote for or against a school by transferring, and word of mouth can affect applications from incoming classes.

"I tell my teachers that not one of the students is required by law to be here," Godowsky said. "They have a district or school system they can go back to. If they walk away, we are sitting here with the possibility of becoming bankrupt."

The students didn't transfer, but some took the projects more seriously than others.

A carpentry student who had never been to Philadelphia took it seriously indeed. "He went to the Philadelphia Museum of Art, found a hutch by a carpenter who played a role in the development of Pennsylvania German furniture, drew it, built a replica of it and described it for his senior project," said Godowsky.

Another student designed a process to convert chicken waste and recycled paper into energy, calling two methane-to-electricity plants in California for information.

As a joke, a 1991 plumbing shop senior said he wanted to research the toilet. To his surprise, the topic was accepted. To the faculty's surprise, he presented a masterful survey on the evolution of the toilet from Greco-Roman trenches to British water closets.

The senior projects may be a step toward creating new standards for students from whom perhaps too little has been expected.

"I had a mindset that vocational education was more for slower kids before I taught here," said Joann Crouse, a private school teacher for 20 years before joining Hodgson's math department two years ago.

That perception has changed. Her brightest student ever is in one of her current classes. Her algebra classes use the same text as her private school classes and move through it faster.

Vocational students have a tougher job to do, she said. "They have a double certificate to go after," she said. "They are going to graduate with the same diploma as a regular high school student with the same number of credits in math and English—and the math is going to be the same. I can't water down a course like Algebra I."

"The real emphasis here is to make what you learn meaningful. Vocational schools lend themselves to that more than other schools."

Janet Nardo, now head of the school's parent association, has changed her mind as well. "When we were growing up, vo-tech was always where the kids went when they couldn't make it in regular high school," she said. Her daughter, Michele, is now a junior majoring in information services.

"We looked at private schools, Christian schools, made up columns to show who could offer her the most," said Janet Nardo. "Hodgson is the closest thing I have found to a private school without having to pay tuition. Now when Michele is wearing her school jacket in the grocery, kids stop her to ask her about the school and how to get in. It has really turned around."

Dana Curlett's parents weren't involved in her choice of Hodgson or her technical drafting major, but they say her choices have made a difference. "Dana made a big leap in her abilities at Hodgson," her mother said. "Her grades went up tremendously." She is now among the top students in her class.

Students at Hodgson, as at other schools, have a wide range of abilities. About five percent of the students are in the "gifted" range. "Generally, the

students are coming here because they have no desire to go to college, and many don't have the ability to do a lot of higher-level skills," math chairman Grandell said. "But they can still be challenged. They are coming from middle schools where many lower-level students are not challenged."

Measuring how well a school challenges students can be tough. Standard tests are still used, but they reflect only the academic portion of what students learn at vocational schools.

Vocational students at Hodgson and the two other district technical schools score higher on national standard tests, including SATs, than those in general and vocational education programs in the county's other high schools. A task force of 140 business representatives, teachers, and parents created a list of possible measurements that included absentee and dropout rates and discipline.

Hodgson dropout and absentee rates compare favorably with other schools in the state, but attendance worries Godowsky. "The economy has more to do with it than anything else," he said. "We have kids whose families are really struggling. They have to work."

For now, he relies on measurements he calls signs of satisfaction—an increasing number of parent volunteers and decreasing student tensions.

"The climate of the school, in terms of racial harmony, in terms of kids getting along, is really better than it was last year," he said. "The number of referrals for discipline are probably the same, but the number due to violent acts and severe disruptions are down."

But it's too early to measure success, Godowsky added. "The performance indicator plans we have developed are basically five-year plans." And the best measure of performance might be how many students are getting jobs or going on to advanced training or college. But there is no systematic tracking of students.

One five-year study showed that 85 percent of those district vocational graduates who do go to work immediately after high school are hired by firms with fewer than 100 employees, Loftus said. "They depend on the quality of the kid we turn out. The big companies don't hire our kids until five to seven years after they have been working."

The co-op programs can help graduates enter the workforce. "Co-ops have a little bit of an edge," said Donna Logan, vice president of Metal Masters, a Newark firm with 39 workers that makes parts for imaging machines and computers, and employs five co-op students in the machine shop. "We hold onto the co-ops because they come to us with experience, versus hiring somebody right out of high school or transferred from various jobs."

Without vocational schools, most of the machine shops would not be able to find people.

Sharing and Dreaming

The teachers at Hodgson are working on refining measures of success, on combining academic and vocational courses, and on team teaching.

About half of the administrators and teachers attend weekly "Conversations"—with no extra pay for meeting before or after school or even on Saturdays.

The conversations can be tense. Both sides worry about having their ideas shot down. "Management is afraid the faculty will want to make management and budget decisions," Loftus said. "But out of the conversations has come more of a comfort level."

Teachers who once talked only in the hallway now meet in an 18-member steering committee, in teams to teach core curriculum courses, and in committees to integrate academic and vocational teaching.

"We are closer to shared leadership here than anywhere in Delaware," said biology teacher Kathryn Hopkins, steering committee chairman. "With shared leadership, nobody is to blame. Whatever we are doing, we are doing because we decided it was a good idea. We really own our ideas."

Joseph Fitzpatrick, director of Delaware Re:Learning, agreed. "One of the things that is unique to Hodgson is that they have more of a faculty-wide involvement. They work very hard to have a faculty-wide vision of what they want to be. A lot of schools cannot get to that point. There is considerable resistance."

The faculty revised the daily schedule to include an end-of-the day planning period, a period Loftus calls a time to share and dream.

"This is my eighth district in 30 years of teaching," Hopkins said. "I have never been in a district like this one. Everybody I know says instructors are highly valued and, whatever you do, they say thank you."

Before Godowsky and Re:Learning, the school had a traditional hierarchy: the principal spoke, the teachers listened. But it is now clear just how much teachers—communicators, after all—want to be involved.

Take the school's 38-word mission statement.

The entire faculty struggled to shape it. At a half-day session they hammered out five different statements, but could not settle on just one.

"My fear was that no one was going to get excited," Godowsky said. "But it was just the opposite." As the session came to a close, teachers who wanted to speak were invited to use an extra chair on the platform.

"It was a very powerful and emotional day," Godowsky recalled. "There was a line of people waiting to talk. Groups were yelling, trying to get up to the seat." At a second session, this revised statement received a standing ovation:

The mission of Hodgson Vocational-Technical High School is to provide a caring, cooperative community where all students are actively involved in integrated academic and vocational learning that encourages them to become self-disciplined, productive members of society. Written by the faculty May 2, 1990.

The words have filtered down to the students. "I have known people who went to other high schools that were really rough, with drugs and fights," said 10th grader Jamison Young, a culinary arts major. "There's a lot better atmosphere here, a more caring atmosphere."

"This is a school with wellness," said Fitzpatrick. "From the effort to have a schoolwide tone of decency, a respect, a trust, a democratic process emerged out of a traditional gap between academic and vocational teachers."

Pitch and Pythagoras

While academic teachers work in teams to teach science and English and history and English, math and shop teachers are trying to put together the literally nuts-and-bolts math of the shop and the rarified math of theorems, x's, and unknowns.

With some extra district money and a mandate to integrate the math program, two of the three vocational schools in the district hired a math teacher to create and orchestrate changes.

Godowsky instead hired another teacher to share class load, then gave every math teacher a free period to visit four assigned shops and recommend changes.

Darnell Grandell, math department chairman, said that for the first time she feels comfortable dropping into shop classes. On a visit to the carpentry shop, she watched students figure out how to build rafters. "That's really Pythagorean theorem and slope," Grandell said. "That's what we do in math, but they called it 'pitch.' "

She decided to demonstrate the theorem by mathematically figuring out how to cut the rafters. When the shop teacher actually cut the boards they didn't have the right pitch. The whole school buzzed about the failure of the Pythagorean theorem before the teachers discovered measurements hadn't taken the thickness of the boards into account.

"The important thing was not that we failed on our first try, but that the whole school was involved in finding out whether or not the theorem worked," Grandell said.

She said her Hodgson experiences and the trips she has taken to other schools have changed the way she teaches.

"I asked to be transferred here," she said. "I was a burned-out teacher. I taught very traditionally, and I was a good teacher, I thought. I stood up there and showed the kids how to do it. It was very boring and dry. I never was really able to answer the question they all asked: 'When am I going to use this in real life?' "

Trips to the shop have given her some answers.

"Normally we have this great isolation," said Dale Derrickson, an industrial shop maintenance teacher working on his Ph.D. "Now math teachers are actually coming in to see what we are doing. This has opened up more communications than any meeting or in-service day.

"In real life in shop we use a lot of math, but we don't point it out as math. Students think Pythagorus is just another dead Greek."

Derrickson and other shop teachers have sample math problems on the diameters of boiler valves, the amount of paint needed to cover walls, the number of tons of air conditioning needed to cool rooms, the amount of current drawn by electric cranes. They all come with notes for students—and other teachers—explaining their work applications.

Godowsky said he isn't threatened by teachers taking leadership roles. He encourages students to assume leadership as well. A student liaison committee now meets with him monthly to discuss some of the same topics that are debated at the teachers' Conversations.

Godowsky said the school is moving in the right direction. "It's clear to me we are not there now, but I really believe we will get there," he said. "The most important element to me [is that] we have an atmosphere of cooperation. If you have everybody working at the same goals, you have a better chance. This is a once-in-a-career opportunity."

The opportunity is apparent to those outside the school as well.

"There is a tremendous enthusiasm about the participants in Re:Learning," said Primo Toccafondi, Delaware deputy assistant superintendent of education. "The people at Hodgson in particular have zeroed in on exhibitions for departing seniors. It has gone very well. They have worked well as a staff, worked through some tough issues, and have come a long way. And, like everybody else, they have a long way to go."

At-a-Glance:

Rockbridge High School

Rockbridge High School, with 300 students (one percent minority), is a small school in a rural, blue-collar Virginia community that, in its work with the Floyd S. Kay Technical Center, has eliminated the general education track and ability grouping. Dropout rates are down, achievement is up, and academic and vocational teachers have shed their biases toward each other, working together on a school vision that all students can learn. Based on National Assessment of Educational Progress tests in math, communications, and science, Rockbridge was named one of the top performing sites in the Southern Regional Education Board's State Vocational Education Consortium. In the 1992–93 school year, Rockbridge High will be consolidated with two other high schools.

Rockbridge County, Virginia: Weaving Together Academics and Work

by Neal Thompson, *Roanoke Times and World News*

Mandi Hartless thought she had life in the farmlands of Rockbridge County figured out. She worked as a cashier at White's Truck Stop, a haven for drivers along the rural stretch of I-81 that bisects Southwest Virginia's Blue Ridge Mountains. She liked the job. Worked a few hours after school and on weekends. Decent Money. Bought a car. Met people. Made friends.

At age 16, she said, "I thought I had it made."

After graduating in 1993, she figured that she could begin working full time at the truck stop and maybe get married along the way. Heck, that's what some of the older cashiers did. They've been there for decades. Jobs—even part-time jobs—are scarce in the area. Hartless considered herself lucky.

Then Hartless began her junior year at Rockbridge High School, and her expectations changed. She entered the school's vocational program and began taking classes at the Floyd S. Kay Technical Center. She never considered herself a "vo-tech" kind of person: "I always thought it was where you went if you were a troublemaker," she said.

But that was years ago and in a different kind of vocational program.

The new program is one that integrates vocational and academic studies to get the Mandi Hartlesses of Rockbridge County on a steady track toward a job or a college. On the inch-thick information packets Rockbridge sends to interested parties throughout the country, they call the program: "Bridging the Gap: A Cooperative Vocational and Academic Program for Secondary Students."

Hartless said the program "opened my eyes" to options beyond her life at a truck stop. Now that she's enrolled in the tech center's health careers program, her goal is to be a trauma nurse in an emergency room. Hartless plans to go to nearby Dabney S. Lancaster Community College for two years and then to James Madison University, an hour north. She joined the rescue squad, volunteers weekly on the mobile blood unit, and works at nearby Stonewall Jackson Hospital.

All of this happened in the first six months of Hartless's junior year. Before that, she thought she knew what she wanted to do with her life. "But now I'm totally sure," she said.

This pilot program—one of three in Virginia and 48 in the south supported by the Southern Regional Education Board—is becoming one of the most radical educational innovations Rockbridge County has seen.

By integrating math and English classes with vocational studies, students see how what they learn in school is connected to the working world. By promoting cooperative learning and hands-on laboratory exercises, students are encouraged to share their ideas and to hone group-thinking and problem-solving skills. And by having vocational and academic teachers work together and occasionally swap classes, they are eliminating a longstanding bias toward each other and working for a common goal.

That goal is to raise student interest and improve the math and communication skills that too often are lacking in the "formidable number" of non-college-bound youth who too often are relegated to the general education track.

"The general track does not prepare kids for anything," said Alice Presson of the Southern Regional Education Board. Schools need to raise their expectations of students, she added, "particularly those we have taught as if they were on a dead-end street."

Innovative Thinking

In Rockbridge, raising expectations for students hasn't cost much, but it has completely changed how teachers teach and what and how students learn. "Money is not the issue. If you are willing to change the way you teach, it will work without additional dollars," said Scott Hannah, director of the technical center. "It is an attitudinal change."

Changing the attitudes of teachers and students first began with radical changes to some traditional school models:

- The multi-track system was eliminated and replaced with two: college-bound and career-bound. No in-betweens. You pick one.
- "Soft electives" were eliminated, taking some of the choices out of students' hands and making some of the harder choices for them.

- "Soft" electives such as general math were replaced with Applied Math, an aggressive algebra- and geometry-intensive course that uses labs and high-tech equipment to solve problems.
- Workbooks in that and the Technical English and Principles of Technology classes were filled with relevant labs and exercises in such areas as business, auto mechanics, and agriculture.
- Joint teacher conferences and exchanges between academic and vocational teachers were held to make both camps more aware of what the other does.

Rockbridge High has about 300 students. Nearly 50 of them attend the Floyd S. Kay tech center, along with another 70 students from two other county high schools. But Rockbridge joins two other county high schools at a new consolidated school next year. Some teachers fear this program will lose its impact at a consolidated school with about 1,000 students. Other teachers say the results they've compiled so far at Rockbridge are strong enough to secure a place for the program in the consolidated school, which opens in 1992.

The Rockbridge High School program which began four years ago, is a lighthouse to other school districts which often send visitors to observe. At Rockbridge, the dropout rate dropped from 6.6 percent five years ago to just under 3 percent. The failure rate declined from 9.5 percent to just under 6 percent in 1990. The average SAT score jumped 47 points in the past four years, and the graduation rate rose from 60 percent to 85 percent in four years. Students were surveyed and reported that they now feel more challenged, are doing more homework assignments, are being given more tests and quizzes, and are also studying more for tests.

Rockbridge's success hasn't been lost on Virginia. The state Department of Education is establishing a league of 100 schools modeled after the same approach Rockbridge uses. And SREB, which considers Rockbridge one of its "high achieving sites," hopes to add 300 more schools to its program.

But there are risks to raising standards.

"When you bring kids up to this level, there's always a few who are going to sift down," Hannah said. To help students who otherwise might fall through the cracks, Rockbridge offers a Learning Skills course. It focuses on students in the lower quartile on standardized reading and math tests.

Overall, Hannah said, Rockbridge has proved that if you raise expectations, "students will do what we expect of them."

And so will teachers. Teachers say they now think differently. They weave career talk into a discussion on Edgar Allen Poe's poetry or into a unit on vocabulary word definitions. Posters on possible careers adorn classroom corkboards.

And students say their teachers are constantly pounding career talk into their heads. In one English class, where the teacher used nursing terms on her vocabulary list, one health careers student said: "This is getting old. I know more about my career now than I will when I work it, probably."

Visionary Leadership

Too bad the creator of this effort is no longer around to see it through. But ask Rockbridge teachers who is responsible for it and they'll say former principal Larry Bond. Bond left Rockbridge High School last year for a deputy superintendent's position in Wythe County, a few hours southwest, where he plans to introduce the same type of program.

"I have a real concern for children in Rockbridge, Wythe, and everywhere," Bond said. "We are ignoring the educational needs of kids in the lower half. We are driving, we are forcing, this particular group of students farther and farther down into the lower socioeconomic levels in our society, and I'm not sure we'll be able to rebound from that."

Teachers say Bond used that emotional cry to rally teachers, administrators and the whole community behind him. He also relayed that concern to the folks at the SREB, which awarded Rockbridge a five-year $100,000 grant.

"He had a way of winning people over," SREB's Presson said. Soon after Rockbridge was awarded the grant, teachers and administrators attended an SREB conference in Hilton Head, S.C., where they listened to business and industry officials lament what a lousy job the schools were doing.

That woke some people up and "set the stage," tech center director Hannah said. They knew what they had to do, but it took a year of academic and vocational teachers working together to figure out how to do it. It came together at a conference in August 1989 at a place called Doe Run Lodge in Patrick County.

Hannah and others still remember it as the turning point, and the place where they changed education in Rockbridge County. At that conference, the academic and vocational teachers both decided they wanted to give the non-college-bound students the skills they would need to find a job. They decided to focus on English, math, and science, a commitment that translated into three new courses for vocational students.

The teachers believed industry didn't want students who could write prose on fluffy clouds. They

wanted factual and accurate writers. No longer could you check your English skills at the door of a factory. Mechanics need to read thick manuals, builders need to write proposals, and everyone needs to write business letters. "The idea is to get kids writing as they would in the workplace," Hannah said. "In industry, it's either right or wrong. They don't grade it A, B, C, D."

This thinking resulted in a new course called Technical English.

In math, Virginia required three math classes for graduation. Students were getting by taking three general courses, in which they learned very little. A student could take three years of math and never touch an algebra problem.

Teachers decided students needed at least basic exposure to algebra, geometry, statistics and problem-solving. That would later translate into the Applied Math program, a concept borrowed from the Center for Occupational Research and Development in Waco, TX. It is now a required course.

"Some of the kids feel they've been forced into a class. Well, that's what some of them need," said John Morris, Rockbridge High's new principal.

In science, teachers realized students needed more exposure to the basics of physics, an understanding needed on the factory floors and building sites of today's workplace. But they needed a new way to present those concepts to students. The result was Principles of Technology, a two-year course that uses videos and lab experiments to expose kids to physics. The decision to change the curriculum, Hannah said, was prompted by changes in the workplace. Years ago, a student could graduate from high school and be a mechanic. No more.

Adding Purpose and Rigor to Secondary Schooling

The Southern Regional Education Board, founded in 1948 at the request of southern governors, is the nation's oldest interstate compact for education. In 1987, SREB formed the State Vocational Education Consortium to oversee a six-year project to strengthen the basic competencies of vocational students. Today, consortium activities are centered in 48 sites in 18 states: Alabama, Arkansas, Delaware, Florida, Georgia, Indiana, Kansas, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, Pennsylvania, South Carolina, Tennessee, Virginia, and West Virginia. Texas is completing arrangements to join the consortium.

The consortium aims at raising the competencies of all high school students in reading, problem-solving, science and mathematics, and decisionmaking.

Its results are impressive:

- As a group, vocational completers scored higher in reading than vocational completers nationwide and as well as general curriculum students in public and private schools nationwide. Mathematics achievement was significantly higher than that of vocational students nationwide and higher than general education students nationwide. Science achievement matched that of vocational completers nationwide, but was significantly below that of general curriculum students.
- Students have higher math scores if they take higher-level courses and if they are required to use math skills in new and meaningful situations. In the higher achieving pilot sites, students pursue a coherent and rigorous sequence of vocational and academic courses.
- Students also have higher science scores if they enroll in lab science courses and if learning progresses from the concrete to the abstract. With experience, vocational students grow in their ability to understand abstract concepts, manipulate symbols, reason logically, and generalize.
- The courses students choose in high school are far more important in advancing their achievement than are the number of credits they accrue in a given subject field.
- Students learn more when their vocational teachers stress the academics.
- At least one-half of students who pursue vocational studies say too little is expected of them in high school. Differences in achievement among pilot sites are enormous, and it appears that most of the difference can be attributed to courses taken and the level of expectations established for students.

Driven by Workplace Changes

Hannah likes to use the auto industry as his example to make many of his points. Years ago, you could yank a wrench from your back pocket and work on a 1972 Ford Mustang just as easily as you could work on a 1979 Ford Mustang or any other pre-1983 car or truck. They were all similar.

Now, mechanical-based cars are dinosaurs, and electronics and computer-based cars are the norm. Some Cadillacs have 20 computers in them, said Floyd S. Kay's auto mechanics instructor, Lem Byers, so mechanics can't just listen for funny noises to track down problems. They have to hook up computer monitors and talk longer with customers to help them through the process of problem-solving. "Everything is changing so quickly," Byers said.

Mechanics also have to know statistical analysis. It used to be that the Ford Mustang that rolled off the line in August 1979 was the same as the one that had rolled off in May. Now car makers tinker with their product a few times a day, and the mechanic must keep track of those changes, through statistical charts and graphs supplied by the auto manufacturers. "That's a far cry from two plus two," Hannah said.

Things are different in the factories, too. As Hannah put it: "No longer does someone screw the bolts on the left rear wheel on the assembly line every day, eight hours a day. That was a fine and steady—if not boring—job in the '50s. But it doesn't exist today."

"Before, companies wanted grunts. Now they're saying you've got to get your head going before you get your hands going."

Such is the case down the road from Rockbridge High, at the Dana Corporation's Spicer Axle Division plant outside the town of Buena Vista. Dana is a Fortune 500 company that hires people from the Rockbridge area to help assemble car and truck axles. The factory floor buzzes with men, women, robots, machines, and computers. There are no supervisors on the floor because, plant manager Gary Bleckner said, workers "know the job they have to do and they do it."

Bleckner works closely with Hannah and the Rockbridge school system, and he thinks they're on the right track. He also thinks it's about time. "I think American industry is spending hundreds of millions of dollars training employees in some things that they should have gotten out of high school," he said. "When you look at application forms and the applicants can't even spell the name of the city they live in . . . ."

That kind of employee is obsolete. Quirks in the assembly process pop up every day in his plant, Bleckner said, and most of his 150 employees are able to solve the problem themselves because they've learned team problem-solving. An employee is no longer an island, but part of a critical thinking team, and if the employees can't be part of that thought process, they'll be left out and replaced. It's that simple.

"Our high schools," Bleckner added, "aren't giving [students those skills]."

Developing Integrated and Applied Coursework

The Center for Occupational Research and Development (CORD) in Waco, Texas, has developed coursework that blends basic academic knowledge with workplace realities, emphasizing a hands-on, applications-based approach to learning. The materials were developed through consortia of state vocational agencies and in collaboration with educators and employers nationwide and in Canada. Among the courses are:

- Principles of Technology—the principles and applications of physics in the workplace.
- Applied Mathematics—arithmetic, algebra, geometry, right-angle trigonometry, probability, and statistics in the context of workplace problems.
- Applied Communications—the practical essentials of writing, speaking, communicating, and working with people in the workplace environment. (This course was developed by the Agency for Instructional Technology in Bloomington, Ind.)
- Applied Biology/Chemistry—blends and presents the two disciplines in the context of work environments.

Most of the pilot sites in the Southern Regional Education Board's State Vocational Education Consortium use the courses. Students who normally would not have taken advanced mathematics or science classes have been able to pursue successfully this higher-level content.

Hannah and other county school officials are confident they are producing a better worker. They spend a lot of time strengthening ties to people like Bleckner and others in the business community to make sure they know what businesses want—and that businesses know what the school has to offer. Rockbridge surveyed area employers in 1990 to determine what employers looked for in a worker. The survey found that 75 percent of the businesses sought employees with a basic training in computers and 50 percent sought a basic knowledge of electronics.

This type of commitment from the schools, and a reciprocal commitment from business, could make Rockbridge an industrial hub, said Stu Litvin, chairman of the Rockbridge County Economic Development Commission.

Rockbridge County is near the intersection of two interstates, I-81 and I-64. It is near Washington, D.C., and has three colleges, tourism, and an affordable and relaxing lifestyle. Five companies have located in Rockbridge County in the past five years. And Bar Marine, a marine engine company based in Pennsylvania, is considering a new plant in the county.

"For a small community, there's no reason we can't be on the cutting edge," Litvin said, adding that the courses being offered at Rockbridge High School have played a part. "It's already paid dividends."

Math teacher Teresa MacGregor didn't know many of the vocational teachers before this program began. When she did run into them, "they would always sort of lay in on me and say, 'You teach math? How come you don't teach fractions? How come you don't teach them how to read a ruler?' And I'd say, 'I do! I do!' "

But it wasn't enough to teach them. So the Applied Math course was offered to give "math-anxious" students a chance to learn by doing. Where a math teacher's tools used to be chalk and a blackboard, the closet adjacent to MacGregor's classroom is now stacked high with scales, beakers, stopwatches, tape measures, calculators, calipers, and micrometers.

"I didn't even know what that was before I started teaching this class," MacGregor said of the micrometers, which can measure to 1/1,000 of an inch.

In the back of the workbooks, there are lab problems for different trades. A building trades student might work a problem that calls for using triangles and rulers. A business student might work one that calls for a calculator. In her class one morning, students were going over the tests MacGregor had returned. Instead of giving them the answers, MacGregor sorts them into groups to figure out the right answers among themselves.

Cooperative learning is vital to the class. Even student Joel Flint thinks it works. "She's a good teacher. But . . . [you are] going to learn a lot more from [a younger person your age] . . . ," she said. "It's like, if we know an easier way to do it, we can explain it better." Flint wants to become a fashion designer. The videos she has seen in this class have shown her that even in her chosen field, she'll use math. She never thought she'd need math again after high school. "But you do," she said. "It's everywhere."

Real Meaning

"Allot" was the first word in one week's 10-word vocabulary list in Cindy Jones' Technical English class.

"It's something some of you who are going into offices next year might be familiar with," Jones told the class of nine 12th-grade girls.

Only Tonya, sitting in the front row, responded to Jones' request for a definition. The first few words reviewed were like that, with just a few students mumbling responses of "I don't know." But when they reached the fourth word, "provision," it launched a class discussion into the drug-testing provisions on employee contracts.

Two nursing students in the tech center's health careers program told the class what it was like to be drug-tested for work. Making boring vocabulary word exercises relevant to the jobs students will be working made the words mean something to them, Jones said later. Until the students latch onto something related to their lives, they didn't care.

Jones said she reads more now on her own time than she ever did, especially the daily newspaper, so she can find relevant tidbits to share with her class and show them how bits and pieces of what they learn pop up later in life.

Writing—book reports, letters, essays—is crucial to this class, but students no longer write about Huck Finn or poetry, Jones said. "Just about everything they write has to be related to their vocation in some way."

Principles of technology is a little bit like traditional physics classes, except without all the theory and the lecturing, said Harry MacGregor, Teresa's husband. He said he tries to show students that what they are learning is actually in place somewhere. For example, he uses videos to show that the force of fluids they are studying can be found in a nuclear reactor. This way, after the video, when his students do lab exercises with fluids, maybe they'll understand why they're doing them.

"They get used to doing the skill we want them to learn," MacGregor said.

Senior Tony Clark said the class is interesting, but that he has his eyes on a security guard job at a nearby college that pays up to $13 an hour. "Thirteen dollars an hour is alright. That's enough for me," he said. But, MacGregor countered, times have changed, and you'll need more than just a high school diploma to find a job that will make you want to get up each morning.

"Life can be a real drag if you don't," MacGregor said. "It hasn't been all that long since a kid could drop out of school and find a job as a mechanic. But now you can't even balance a tire without knowing how to work a computer."

This class is a new experience for MacGregor, who used to teach physics to mostly college-bound students.

"I had been teaching what you might call all academic subjects," he said. "Most of the kids in the academic classes are pretty much self-motivated. And that's not necessarily the case here." So he constantly refers back to his 25 years with the Army Corps of Engineers for real-life examples of physics to share with the class and make the topic relevant. "There's nothing that I teach that I can't talk about the useful applications for it," he said.

Seventeen-year-old Randy Gardner said this approach helps him. "If some of us don't understand [what we're studying, Mr. MacGregor will] put it in terms of something like a car engine," he said.

Gardner said because of the applied courses, he is considering a job in electrical engineering. He plans to pursue his studies in a community college or in the army.

Otherwise, he said, "I'd be stuck somewhere pumping gas."

Gardner said he's noticed something else during the two years he's been in the program. Attitudes toward vocational students have changed. It used to be us versus them, Gardner said. Now the stereotype seems to be fading a little bit.

But he's not so sure what will happen next year. No one is.

The long-time home of the Rockbridge High School Rebels sits along a winding country road on one hill among the farms, a smattering of houses and the Blue Ridge Mountains. The air is full of the smell of fertilizers. Dusty dirt roads sprout off the main road, and pickup trucks are the vehicle of choice.

Uncertain Future

But this is the last year these students will call their school home. Next year, they join more than 700 students from two other schools in a single new building that has been planned for decades. Construction on the new school is to be completed in April.

Fortunately for the vocational students, the new high school is being built as an addition to the Floyd S. Kay Technical Center. Vocational teachers see this as a benefit, since all students will be in the same building. And Rockbridge's vocational students won't lose a period each day taking a 20-minute bus ride to and from the tech center.

Unfortunately, because the new student body will consist of students from three demographically different areas, no one knows what that will mean for the vocational program. Lexington High School, for example, is in the city of Lexington, which is also home to Washington & Lee University and Virginia Military Institute. It's the academic and cultural hub of Rockbridge County, and the parents there do not consider vocational education a top priority.

Said math teacher Teresa MacGregor: "The first few years are going to be kind of rough." The transition may be a rough one, Hannah said. But in the long run, it will expose more kids in Rockbridge County to a program that could be the future of vocational education.

Also, John Reynolds, the new principal of the consolidated high school, was a businessman for a year before returning to education. In late January, at the first joint meeting for teachers from all three schools, he promised his commitment to the Rockbridge program.

"The cause," Hannah said, "has not been lost."

Further, Rockbridge County recently joined a tech-prep consortium of six school districts that is working in conjunction with Dabney S. Lancaster Community College.

And the local Virginia Employment Commission has set up a speakers bureau for local professionals to give lectures about their careers to high school students.

Add all that up, Hannah said, and it shows that things are just getting warmed up.

"This isn't some little thing that's here today and—Poof!—gone tomorrow. It's here to stay. Education has got to be revamped."

At-a-Glance:

Rindge School of Technical Arts

Rindge School of Technical Arts (RSTA) is part of the Cambridge Rindge and Latin School—the only public high school in Cambridge, Mass. The 2,400-student population is roughly 54 percent minority and represents 64 countries and 18 languages. About 41 percent of the students qualify for the free-lunch program. The school is composed of seven "houses," which operate separately but in collaboration with each other. Students are pretty much restricted to studies in the houses they select for their first year. More popular houses use a lottery system for enrollment. In the latter two years of high school, there's an open enrollment policy, which means students can freely take courses throughout the system.

Rindge School of Technical Arts—the second oldest vocational program in the country and now committed to 100 percent integration of academic and vocational studies — is one house in the two-building campus. The others are: the Pilot School (stressing close staff-student relationships for a diverse student population), the Fundamental School (with a back-to-basics, traditional focus), the Academy (which stresses cooperative learning), House A (which stresses study skills), the House C Leadership School (which stresses community service and leadership) and the Enterprise Co-Op (for potential school dropouts). Full-time enrollment at RSTA is 280 students, with 75 ninth graders. The other houses enroll 200 to 400 students, except for the Enterprise Co-Op, which enrolls about 30 students.

Rindge School of Technical Arts in Cambridge, Mass.: Using the Community to Develop Student Talents

by Catherine Foster, *Christian Science Monitor*

In the old days, the technical-vocational program in Cambridge Rindge and Latin High School was a dark place where the desks were bolted to the floor, and, as a former student put it, "You could work—or not work." One teacher went away for 14 years, came back, and nothing had changed. And despite being surrounded by leading thinkers at Harvard University and the Massachusetts Institute of Technology, only recently have vocational students benefited from the universities' input.

Enter Larry Rosenstock one year ago, the energetic, everywhere-at-once executive director of the school. He taught carpentry in Boston and Cambridge city schools for 11 years, then went back and finished up a law degree that he'd started working on 15 years before. Rosenstock seems to be the perfect person to understand the importance of training students for more than one career. "Most people change jobs in their lifetime four to six times," said Rosenstock, sitting in the office his students help build. "Only 27 percent of the kids end up working in the field they trained for."

While the old Rindge Technical-Vocational Program was the second oldest in the country, the new program, renamed the Rindge School of Technical Arts (RSTA), is one of the newest. Since his hiring in January 1991, Rosenstock has turned the place upside down. He's gotten two huge rooms completely renovated; reorganized the ninth grade; set up an internship program with Lesley College (a nationally respected teachers' college) and started an apprenticeship program with the Polaroid Corporation. He has entered into partnerships with university faculty, businesses, and the community, and has gotten teachers to share his vision.

His mission is three-fold: to integrate vocational and academic education, move vocational education from narrow, skills-based training to instruction in "all aspects of the industry," and forge links between vocational education and community economic development efforts.

If this sounds similar to the 1990 Carl D. Perkins Vocational Education Act, it should. As an attorney for the Center for Law and Education, Rosenstock, with Center director Paul Weckstein, helped write the legislation. Rindge is a model demonstration site for the Center's vocational education project.

For Rosenstock, this is not just a job, it's a mission. And he sees RSTA not just as a school, but as a community. Maybe that's why he's going to buy Raymond, a 16-year-old student who has lost 240 lbs. since last spring, new clothes to fit his new body.

In a way, Raymond's incredible weight loss is a metaphor for what's going on at RSTA, releasing a more flexible concept from the confining strictures of the past. The year-old program is noisy, somewhat confusing to all participants, and seems to contain few books. But, as one teacher put it: "They're finally going back to basics." And from those new basics, the intent is to rebuild the entire foundation of vocational education—at least at Rindge.

A New Identity

The first three goals were to change the name of the school, create a campus center, and change the image. The new name was chosen, said Rosenstock, "to reflect the merger, like Bauhaus, of academic and fine arts with technical and vocational arts."

Next, he turned an old machine shop into a bright, cheery central core of offices for himself and the counselors, and a gathering place for the students. The counselors initially thought it would be noisy, but found that the kids treat the space with respect. And what often happens is that the students the counselors need to see end up in the communal area, right under their noses.

The teachers, many of whom have their own contracting businesses outside of school, organized the renovation, which was paid for in part by selling two old pieces of shop equipment. Then the students were put to work. The seniors did the electrical work, freshmen helped paint. Over a dark-green wall they painted a mural of many students, in deliberately calm pastels, a contrast to the early '70s blocks of primary colors seen throughout the school.

David Stephen, a graphic artist with an architectural background and experience working with the trades, was hired last spring as a consultant on the mural. He now runs CityWorks, the innovative ninth-grade program.

"We wanted to create a positive presence in the school . . . that we were not just people who worked with our hands but professionals," said Stephen.

Half of the students who worked on it were from RSTA, half were art students from the academic part of the high school. "We bridged the gap a little," said Stephen. "RSTA tended to attract kids who were not academically oriented, who needed remedial work. There was something of a class division."

After the center was created, he said, "suddenly, we were the people who got things done. Teachers and administrators wanted advice on use of space and electrical needs. There was a significant shift in people's attitudes about what the kids were capable of."

New Focus

Rosenstock decided to start with the ninth grade this year, and to keep changing the school grade by grade. CityWorks consists of one period in the morning; the 75 students spend the rest of the day in science, social science, math, and English.

In the past, these ninth graders would have been taking exploratory classes in the different shops: auto body, automotive, carpentry, contracting, subcontracting, electrical, electronics, computer arts, welding, sheet metal, culinary arts, baking, and graphic arts. At the end of their first year, they'd choose one area of study and usually stick with it for the next three years.

The current crop of ninth graders instead got a brief overview of all the trades, then three-week exploratories. The focus has been on learning basic, transferable skills and communicating with other students, rather than the right way to bang out dents in a fender.

The program is housed in a large, newly renovated electrical shop which has moved to a corner location. Rosenstock and Stephen wanted to get the students to "own" the classroom, so students and faculty partitioned the room into five studios (five to seven students each) with wide doorways. The students built and sponge-painted their own work tables, as well as storage bins for the portfolios of their work. At one end of the room is an area that will someday be a resource room, with books, a stage, telephones, computer area, and time-out room. They're talking screenplay down the road. "It's ambitious," said Stephen, "but it's the kind of thing that will get them involved."

Getting the kids to "own" the city they live in is another important theme of the program. The students were taken on a tourist bus tour of Cambridge. After the conventional tour, Stephen made the bus driver go to the working-class neighborhood of triple-deckers in East Cambridge where most of these students live. Quiet during the ride past the million-dollar Brattle Street mansions, they came alive in their own neighborhood. One outgoing boy named Victor stood at the front of the bus playing tour director and pointed out landmarks that he knew, since the bus driver was out of his element.

Breaking the boundaries between students and community is important to make them confident members of society, said staff member Adria Steinberg. She remembered one girl who was supposed to go to an internship at Lesley College only a few blocks away from the high school, but ended up crying on the curb because it "was too far from home."

The goals of the program are to get students to learn to problem-solve and think creatively, work in small groups, relate what they're learning to the world of work, assess what they're learning and communicate that in writing and in oral presentations in front of classmates.

In the weeks-long Walk-Around-the-Block exercise, students made the neighborhood their textbook. Each team was assigned a different block in the adjacent neighborhood, and sent out with inventory forms, instant cameras, and tape recorders. They were instructed to draw what they saw, measure distances between things, and collect basic demographic information about passers-by. Some of the things they recorded were two cats fighting, brick sidewalk, clapboard houses, mailbox, telephone pole, recycling bins. One group interviewed the meter maid. Polaroid donated cameras to make photo IDs so the kids would receive a warmer reception on the street.

Back at school, the teams artfully arranged their findings—snapshots, demographic information, and architectural drawings of the houses—onto large pieces of cardboard, making successive drafts and enduring critiques by fellow students.

The idea was to get the students to learn how to measure and read maps and symbols, and to think about scale and the properties of an object. "A lot of the kids are visual learners, they're good at this stuff, even if they're not good at math," said Stephen. "It's an opportunity to work with something they excel at."

Communicating Findings

On presentation day, each group told the class about its project, as Stephen videotaped. Many stu-

dents were nervous and held the papers they were reading in front of their faces, mumbling inaudibly. But only a month later, they were doing similarly taped presentations about what they learned in their exploratories. This time, far fewer hid, and the students looked nearly comfortable.

"In September you couldn't have had these presentations," said guidance counselor Mary Jane Clancy. "They wouldn't have sat still or respected each other's space. This time there was real progress. The stereotype of these kids is that they're not comfortable in verbal spheres. It's made a real difference in their lives." She said that attendance had improved in the ninth grade, as had behavior.

CityWorks teachers and administrators talk of limited expectations being surpassed. "When teachers heard that the kids were going to be doing presentations they said, 'They'll choke,'" said Stephen. "But some were phenomenal. The teachers said they can't believe they're the same kids."

"In my group there were two kids you couldn't get to open their mouths," said Fred Peary, who teaches subcontracting. "Now you can't shut them up."

Because the program is so new, and a large hunk of time in the fall is spent on physical renovation, some of the ideas for the program may have to wait another year. Students were going to write stories about the people they encountered on their Walk Around the Block. That didn't happen. But other ideas have come forth that they hadn't planned, like the '60s Cafe.

Joel Legault thought that in his culinary exploratory he'd be teaching his students some cooking as well as new skills. But the students took the simple idea of creating a menu, and ran with it: they ended up planning every detail of a restaurant for students. They called it the '60s Cafe and described it as: "A place that has the style of the '90s with the atmosphere of the '60s," where American food is served such as pizza, nachos, and chicken wings. They even picked the site of a former supermarket across the street for the restaurant. One student is talking to his father, a restauranteur, about taking steps to open it.

"I think it could really work," said Legault.

That's what Rosenstock meant when he spoke of "all aspects of an industry." Students are learning the financial and management aspects of running a restaurant, as well as the best way to slice onions.

In the CityWorks studios, the teachers are asking their students to write short pieces on what they learned in their exploratories. Some have more difficult classes than others. For English teacher Albert Newton, getting answers is like pulling taffy.

"What did you learn?" he asks one student.

"Made a bell," the kid mutters, looking at the table.

Newton pulls out more: "What kind of bell?"

"A DOOR bell," answers the student in disbelief.

In Paul Walsh's carpentry class, students work together. Raphael says that in his exploratory he learned to splice wire and to wire a doorbell. Alan learned how to bring down electric voltage. And they're not slouching on English, either. Alan says he's reading Alice Walker, and learning about "biographies and narratives, and writing interrogative sentences."

"This is a first for me," said Walsh, standing in the hallway that links the studios so that his students, hunched together over their work table, can write their summaries in peace. "I think it's excellent. I'm getting to know other kids in other classes, not just my own. Before, if a kid didn't like you, it was three weeks of hell and the end of you for four years. Here there's more unity and respect."

"Another thing is, this way saves more kids. In the past, if I've had a kid for a long time, I'll sometimes lose him in junior or senior year because he's flunking English. They'll pull him out for more academics. There's more of a grip on them here, and there's more academics than before."

"My group was one of the toughest to get started," said auto mechanics teacher Al Stowell, "but when they saw what the other studios had accomplished, it motivated the three or four in my group who didn't want to participate."

Working Out the Bugs

There are still bugs to be worked out. It's apparent to all that the original design of the room needs fixing. The din was incredible, and students had a tendency to roam and get rowdy. So the teachers are talking now about ways to make the studio entrances smaller.

Traditional textbooks are nowhere in sight, except in a bookcase. "It's intimidating enough for them to read anything, less so if we give it to them piece by piece and it can be applied directly to what they're doing at the moment," said Stephen.

Electrical teacher Tom Lividoti looks a bit longingly at the books. They're being used by only the 10th and 11th graders now, not the ninth. It's clear that this is an area of the new program that Lividoti is not comfortable with. "I think they're ultra-important," he said. "In fact, in the schedule for next year, I fought to get [textbook work] extended from one to two periods a day."

The spring project is to create a huge map of Cambridge on the wall, with tiny lights for landmarks. The graphic arts exploratory is working on designing the graphics for and drawing the map on the wall.

Electronics is figuring out a system for wiring the map. Carpentry will be making a panel for the push-buttons that light up a particular landmark or neighborhood. Electrical is working on the interface between electronic hookups and an alternator, and a battery storage supply for powering the map. Auto body is welding together a bicycle on a platform. The bike will power the battery that will power the map. "It's another place we can put the kids when they're becoming overactive," said Stephen, jokingly. "You in the back there, 20 minutes on the bike!"

When students are asked to articulate what City-Works is about, "they don't always understand it, the teachers don't always understand it, and I don't either," Stephen said. "We're evolving. But when you look objectively at what they're producing and the care that they're taking in what they're doing, I think it's clear they're getting a lot of benefit from it."

Teacher Buy-In

Rosenstock knew that he was asking veteran teachers to radically change their teaching style overnight. He made up three rules:

- Everyone would be kept informed.
- Nobody would have to participate in this reform who didn't want to.
- Anybody who did not want to participate would not be allowed to block those who did.

At the same time, he gave the teachers support. Adria Steinberg, editor of the *Harvard Education Letter*, came over as a consultant to meet with small groups of teachers last spring. She liked it so much she arranged to stay on. In their meetings, known as CityTeams, teachers get feedback, gripe, give support, change tactics, and plan new ones. It is a vitally important way of making them part of the process. Rosenstock visits each one every week.

"Initially many people were uncomfortable with the changes," said Steinberg. "The whole integration of academics and vocation may be threatening to someone comfortable with the trades. We're asking them to be generalists on this level."

"No one decided not to do it. Not everyone was hunky-dory about it, we're challenging 15, 20 years of experience. We're asking a lot of them to embrace this."

Tom Lividoti, electrical teacher, said the greatest learning process has been for the teachers, not the students. "[Team teaching] is a totally different structure," he said. "In the beginning it was quite confusing, but the curriculum seems to be getting more and more solid each day, and the program more cohesive."

Laura McShane, an intern teacher, said, "one thing that's impressed me is to see how willing this group of people is to try new things and be flexible. I think a real asset this program has is these teachers who have this tremendous background and yet are saying, 'I'll try to do it this way if you think we can accomplish something by doing it.'"

Said Albert Newton, who teaches English in City-Works: "The opportunity to meet every day to iron out wrinkles in the new piece or if something didn't work out, we have this forum to talk it out. I don't have to think of this in the vacuum of my space alone."

What do the teachers see as the program's goals? Many say that's a perception that's still evolving. "Every traditional vocational program nationally is limited to the specific trades that it offers," said Lividoti. "In CityWorks, what we're trying to show is the big picture. Not only [in] electrical, automotive, and other shops, but in field trips, we're trying to show [students] a more global thing rather than only the specific trade things available at your school."

The teachers are starting to plan next year's 10th-grade program. The students will continue to explore various shops. Related shops, like carpentry and electricity, will be clustered and team-taught. Students will cycle through three clusters. The idea is to get the students to see the fields as related and to provide an opportunity to affect teachers' practices through team-teaching.

Apprenticeships at Polaroid

While Rosenstock decided to focus on transforming just the ninth grade this first year, he also felt there were some good steps to be taken with the 11th and 12th graders. Interested in a work-study program, he hooked up with Jim Hawkins, director of technical services at Polaroid Corporation.

Hawkins had long felt that the company needed new blood and that it should be doing something to help the community. He also knew those who work in today's high-tech trades needed more than just skills. "They need college-level algebra, and even plumbers have to know basic physics," he said.

The Rindge-Polaroid program, started last year with eight students, provides an opportunity for students to work with regular Polaroid employees in electronics, instrumentation, plumbing, carpentry, and multiple crafts (which combines several fields). "We aim to get the best possible person consistent with our program goals of encouraging minorities and women into the trades," said Rob Riordan, an RSTA teacher. "We're committed to getting some people with no shop experience."

The students earn $7.49 an hour and work two and one-half-hour shifts. Lorraine is working with three different plumbers, learning how to make a work order, come to a price, and change a cooling system from once-through to closed. Acia is entering water purity data into a computer, and later she'll start measuring the water purity. Rams is making jumper wires. Calvin is busy putting payroll and work-order data into the computer. And because he's good at graphics, he's in charge of the newsletter, *TIP-IN* (for Technical Internship Program Information Newsletter). In it, the students chronicle the skills they're learning, report on field trips, and interview their teachers.

In this, as in other sections of RSTA's program, verbal and written communication are stressed. Students have large binders in which they write weekly summaries of what they're learning. And periodically, they give presentations to Hawkins and other high-level Polaroid employees.

Lunchtime seminars that feature guest speakers satisfy English and social studies requirements, because students learn what a corporation is, its relationship to a community, and its role in the environment.

"Instead of having kids work in a shop and reading 'Silas Marner', their subject matter would be their work as they're experiencing it," Riordan said. Students also learn what it means to go to work and how to get along with people, which is important, he added, because most people get fired because they can't get along [with their coworkers].

Another plus of the program is boosting students' self-esteem.

"I can see their confidence grow," Riordan said. "One kid almost didn't make it into the program; he was mumbling, his eyes were down. But he came highly recommended. Within the first two to three weeks, we had a guest speaker come in and this kid turned around, introduced himself and smiled. It was very dramatic."

Is this program replicable elsewhere? "Absolutely," Riordan said. "The whole seminar point is really worthwhile. I see kids making connections important to them."

Another desire is to have teachers learn more about what's going on in the industrial world, in order to better help the students grow. Polaroid sent Rich Petrillo, a Polaroid electrician with teaching experience, to work at Rindge for a year.

Petrillo sees the main benefit of the apprenticeship program as teaching good work habits. "The average trade guy is 49 years old. It's hard to replace that person, apprenticeships are four-to-five years now. And large corporations are demanding [about] what comes through the door. The kids don't get it. The main goal is to get them ready for business-reality. If corporations are smart, they'll want to be part of it." For other reasons as well.

At the pilot group's graduation, Hawkins said, "You should have seen these teary-eyed blue-collar types. They get emotionally involved with the kids."

Lesley College Internship Program

Lesley College, an 83-year-old teacher-training college, is a short distance away from RSTA. Last spring, they, too, entered into partnership with the high school. Three mornings a week, 12 juniors and seniors are driven to the college by teacher Rob Riordan. On other mornings, they work in elementary schools. By 11 a.m., they're back at RSTA, taking math, science, and other courses.

The involvement with Rindge occurred at a time when Lesley was devoting thought to how it could best meet today's educational needs. "If you think of the model of a new teacher [recruit] in years past, an 18-year-old middle-class woman, clearly that strata won't provide us with the numbers, the type, and quality of [teachers needed in] 1992, much less the year 2000," said Patricia Byrne, assistant to the Lesley president.

She sees tremendous benefits to the profession of having new teachers enter the field whose life is not radically different from those of the students they teach.

Lesley had two goals, she said: to experiment with new ways to involve the high school and to deepen the relationship with RSTA to attract more kids. That thinking made the alliance with RSTA natural.

"For me, this whole process has been tremendously professionally revitalizing," said Byrne.

Activities at Rindge have drawn both national attention and local excitement.

"We've got school districts all over the country that are trying to pick up on our CityWorks program," Rosenstock said, "and now we're getting foundation support we didn't even seek to help replicate what we're doing all around the country. One of the things we're thinking about doing is to create a national network of progressive vocational schools so that we can support each other."

Locally, staff members of the Museum of Science, the Cambridge Historical Commission, and the mayor's office, as well as businesses such as Polaroid and MIT's Draper Laboratory, are offering their services. Several other Cambridge companies are interested in setting up work-study projects.

Other schools, having heard of the program, are calling for advice. Teachers are being asked to speak

at national conferences. And at least two foundations have offered money.

Striding down the long halls lined with lockers, Rosenstock summed up his philosophy for RSTA. "The first thing we want to do is really midwifery. These are the kids who have the least status in school, the teachers have the least status in school, so first thing is to really bring them all out of this; get them doing wonderful things and having wonderful ideas.

"Stage two is to have them no longer segregated by social class, so that they're with other kids throughout the school. Stage three, and the tallest order, is to have these kids affecting capital in their community just like other kids do—to know 'why' instead of just 'how', [to] work to have them be intelligent persons in a social context."

A visual testimony of what Rosenstock, Riordan, Steinberg, and the other teachers are trying to do can be seen in the lush pastel mural in the RSTA student center.

It's done in four panels, each representing a different phase. The first depicts children just hanging out in front of a school. The second shows a student at a computer, a group drafting, a child on a ladder, measuring. The third shows a child looking through a door, a woman nailing.

The final panel portrays the students' vision of the good life—against the backdrop of a tropical island, a young man is holding a tray with a piece of cake, while a woman is holding a baby. It exudes contentment, fulfillment, and success.

ABOUT THE REPORTERS

Linda Chion-Kenney is a full-time, freelance writer living in Columbia, Md., who has covered the national education beat for more than eight years. A former staff writer for *Education Week* and daily newspapers in the south, she is a frequent contributor to *The Washington Post* and has written for education associations and federal agencies. She has won awards for her writing.

Jacqueline Cutler is the education reporter for *The Oakland Tribune*, where she has been a general assignment reporter and done enterprise stories on race relations. She covered the state capitol for *The Hartford Courant* and municipal government for the *Greenwich (Conn.)Time*. She also teaches English to Soviet emigres.

Catherine Foster is currently the national news editor at *The Christian Science Monitor*. Over the last 10 years, she has been Arts Editor and has written on education, the environment, women's issues, housing, politics, economics and the arts. She has written for *The Saturday Evening Post* and *Reader's Digest*, and has been featured as well on MonitoRadio and Today's Monitor, broadcasting offshoots of *The Christian Science Monitor*.

Neal Thompson is the education writer for the *Roanoke (Va.) Times & World News*, where he has covered policy and state courts at its New River Valley Bureau. Thompson was a full-time stringer for the southern New Jersey bureau of the *Philadelphia Inquirer* and has contributed to *The New York Times* (New Jersey Weekly) and *Atlantic City Magazine*.

Vyola P. Willson is a freelance writer in Philadelphia, Pa. She is a stringer for the Chester County bureau of the *Philadelphia Inquirer* covering business and financial news. She is the co-author with Pam Belluck of a three-part, page-one *Philadelphia Inquirer* series on S&Ls. Willson is a former financial editor and editorial writer for the *Hartford Times*.

Other Programs

America's Choice and the Roosevelt Renaissance: Setting Policy for New Directions in Oregon

In Oregon, it's known as the Vera Katz law, and it requires that by the end of the 1996–97 school year, every high school student should have the opportunity to obtain a "certificate of initial mastery." With paper in hand, students can then choose to attend any public school program that leads to a "certificate of advanced mastery," with either a college-preparatory or academic professional technical endorsement, or both. Further, a student who wishes to work, but hasn't received a certificate of initial mastery, would have to make special arrangements to do so.

The law models recommendations made in *America's Choice: High Skills or Low Wages!*, the influential 1990 report of the National Center on Education and the Economy's Commission on the Skills of the American Workforce.

The high school initiative has received some funds for planning, but no one is quite sure how much money will be available to carry out its revolutionary mandates. In fact, the law says that nothing has to be done if there's no money to do it; in a state that has no sales tax and a recently passed property-tax limitation, that's a major loophole.

Meanwhile, Roosevelt High School in Portland, Ore., has been working for two years on a program that realizes many of the intentions of the Katz law. The Roosevelt Renaissance 2000 initiative is set to open in September 1992. As a comprehensive high school, Roosevelt will offer a certificate of initial mastery in a program of studies that focuses on different career paths, such as health and human services; manufacturing, technology, and engineering; professional, commercial, and public services; and natural sciences and resources.

The curriculum will be driven by interdisciplinary teams of teachers who have been working with industry, parents, and higher education personnel to develop instruction intended to prepare students not only for further education, but also for entry-level jobs.

As part of another project funded by the National Youth Apprenticeship Initiative of Jobs for the Future, Roosevelt will offer a curriculum for work-based learning at the school and on the job. Initially, 100 students will be involved, but eventually all juniors and seniors will be included.

Roosevelt serves 1,100 students, a population that is 55 percent European American, 20 percent Afro-American, 5 percent Hispanic, 5 percent Native American, and the rest Asian American. About 51 percent of the students are in the free-lunch program.

Bethel New Life and Chicago's West Side: Working to Improve Schools to Better Communities

In West Garfield Park, community activists are using their talents to broker resources to improve schools so that they can improve communities. The group aims to reshape vocational education programs by both transforming their curriculum and linking the education program with actual economic development projects.

Bethel New Life, a community development corporation on Chicago's economically depressed West Side, has organized and provided resources for the Youth Enterprise Network (YEN). Through the network, parents, students, and others in the community work in collaboration and in full partnership with the schools to plan reform efforts.

The YEN curriculum task force, for example, has been working with teachers to develop curriculum that encompasses all aspects of an industry and that integrates academic and vocational subjects, two conditions spelled out in the Carl D. Perkins Vocational and Applied Technology Education Act of 1990. To help students assess needs in their community, YEN has helped to establish school-based, youth-owned enterprises. Student venture clubs research needs and business opportunities and then develop and operate enterprises to meet these needs.

The Bethel New Life initiative, like the Rindge School of Technical Arts in Cambridge, Mass., is part of the Center for Law and Education's Vocational Opportunity for Community and Educational Development (VOCED) project, an effort to "help low-income students and communities redirect vocational education programs to better meet their needs for education, employment, and community development."

Other VOCED projects in Chicago include:

- The George Westinghouse Vocational High School, with a 50 percent graduation rate and strong parent interest for preparing students for postsecondary education, is clustering its occupational studies

and implementing a tech prep program that coordinates its curriculum with that of a local community college. At the newly opened School of Commerce and Communication, ninth graders, scheduled in blocks, have the same teachers, who work together to integrate academic studies and business education, graphic arts, commercial arts, and drafting. Also planned are a School of Professional Service and a School of Evolving Technologies.

- The Lucy Flower Vocational High School is a member of the Coalition of Essential Schools, a school reform movement founded in 1984 at Brown University by Theodore R. Sizer.
- The Rezin Orr Community Academy recognizes that students are members of families and communities. An on-site clinic attends to their health needs, while providing vocational education in health careers. A child-care center offers teen parents a chance to stay in school, and a vocational program in child-care services. Orr offers evening hours for its working students and the Neighborhood Open Schools program provides facilities for community-based education initiatives.

Florida and the Blueprint for Career Preparation: K-12 Focus on Life After High School

Three years ago, Florida's Department of Education made a commitment that every student, upon graduation, would be ready to enter a postsecondary education institution or the workplace. "It wasn't an either-or situation," said Laurey Stryker, assistant commissioner of education. "We could see that the needs of both were merging very quickly."

The Blueprint for Career Preparation—an outgrowth of the state's participation in the SREB-State Vocational Education Consortium—is the means for achieving that goal. Among its guiding principles are:

- Students in grades K-5 should have a career development program which infuses self, career, and technology awareness into the curriculum.
- Students in grade 6 should have a program of personal assessment and technological literacy.
- Students in grades 7 and 8 should identify goals for which they are striving. Goals may change as further experiences are obtained. Four-year plans for grades 9–12 should be developed with input from students, families, and school personnel. The plans should be evaluated at least annually and revised as requirements or students' goals change.
- Students in grades 9–12 should complete high school with the competence to continue on to postsecondary education and to enter the workforce. The strengthening of basic skills through applied learning should be a major component of both academic and vocational instruction.
- Students should complete postsecondary education programs which enable them to successfully enter the world of work, maintain competence in current employment, advance within their occupational fields, or change occupations.
- All levels of education should intensify efforts to involve parents, business/industry, and the community in educating students and supporting Florida's economy.

Foxfire and Experiential Learning: Lessons for Apprenticeship Programs

In Rabun County, Ga., under the leadership of high school teacher Eliot Wigginton, hundreds of students have been engaged in "cultural journalism," a term for the collection and publication of local history and culture. According to John L. Puckett, an assistant professor at the University of Pennsylvania Graduate School of Education and author of *Foxfire Reconsidered: A Twenty-Year Experiment in Progressive Education*, the educational program not only links the school life of students to their out-of-school experience in a meaningful way, but also gives them vital academic and personal growth skills. Because students are interested in seeing their work published, they have "both a desire to learn and a willingness to work hard to produce quality publications on a regular basis."

Since 1977, Foxfire has become a vehicle for the preservation and dissemination of southern Appalachian traditions and folk wisdom. Its quarterly magazine and nine Foxfire books have combined sales in excess of 6.7 million copies.

The Clement G. McDonough City Magnet School: Linking School to Life—Before High School

Connecting school to work and life needs to start before high school. The Clement G. McDonough City Magnet School in Lowell, Mass., a K-8 school of choice that reserves 45 percent of its slots for minority students, is exemplary in this endeavor, according to the Center for Human Resources at Brandeis University. Students at the 11-year-old "micro-society school" run their own banks, court system, businesses, law firms, publishing companies, and crime-

stoppers department. Students have their own bank accounts and their own currency, which they called "Morgans," after a former superintendent.

Students must 'pay' tuition to attend 'academy' classes. They get 'paid' for going to work, and they get their jobs based on placement exam scores and teacher recommendations. The higher the score, the more responsibilities. For example, a high score on the economy/accounting exam would make a student eligible to be a bank manager or to own a business. With a lower score, a student could be an employee in that business or a bank teller. After taking the bar exam, students qualify to be a judge, lawyer, or an assistant to a lawyer.

Students must have experience in the activities of all four micro-society strands, which are publishing, economy, citizenship/government, and science/high-tech. In grades K-3, they are gradually introduced to the program. After that, students at the 330-member school take on more responsibilities as they progress from grade to grade.

Pittsburgh Public Schools: Nixing the General Education Track

More than half of Pittsburgh's students come from single-parent homes, and 85 percent qualify for a free or reduced lunch. About a third live in public housing. Yet, the city has the lowest dropout rate in the country for urban schools, and a lot of that "is attributed to our program," said Fred A. Monaco, director of the district's division of occupational, vocational, and technical education. "We've always said taking a vocational or technology course and adding a support component to it is almost like a dropout prevention program, because kids have to be able to do things and they get a lot of positive reinforcement."

Pittsburgh eliminated the general education track after studying what happened to its students. Not only did they get low grades, have poor attendance and drop out in large numbers, more than 75 percent of them were still seeking work a year after graduation, according to a school board-appointed panel that spent two years studying the track.

With the general education track gone, Pittsburgh students must now decide before they enter the 10th grade whether they want to pursue an academic or vocational diploma. Vocational education programs attract both the honor-roll and at-risk student, and the emphasis is on learning transferable skills and exploring a range of career opportunities. All curriculum is approved by business and industrial representatives.

The 'REAL' Approach to School-Based Enterprises: Schools as Small Business Incubators

Based upon the writings of Jonathan P. Sher, and implemented under the direction of Paul DeLargy, Rural Entrepreneurship through Action Learning (REAL) helps schools become effective small business incubators. The aim, said Patricia Owens, a spokesperson for REAL, is "to create job creators."

REAL students in the founding states of North Carolina, Georgia, and South Carolina have created and operated a diverse selection of ventures, such as a Christmas tree business, feeder pig farm, graphics firm, child-care center, shoe repair shop, and recycling business. REAL activities are also taking place in Alaska, Mississippi, Washington, and Wyoming.

Arguing that students can't learn to think and act as successful entrepreneurs from a textbook, REAL has students learn by doing. One such exercise requires students to identify a "good" business owner based on a certain set of criteria. The students shadow that owner for a minimum of 20 hours, "from the moment she starts her workday—often well before her official business hours—until the moment she decides to call it quits for the day—often well after official business hours," according to Owens.

Students take a two-year program, which, for some students is linked to study in a community college. If after completing a community needs survey, a feasibility study, and writing a two-year business plan the proposed business venture is deemed to have potential, REAL arranges for start-up funding. "Sometimes," Owens said, "the businesses that don't open teach you a lot, too." Those that do, she added, help not only the students, but also the local economy.

Questions to Ask

In developing questions for the site visits, EWA was interested in finding out how exemplary projects developed, what research they were based on, and how well theory was borne out in practice. Here are the questions we developed for reporters in visiting the sites.

Vision—What research or experiences did leaders draw upon to design the initiative, to draft the mission statement, to sell the changes to the public, to get teachers to change their ways, and to get business and higher education to play a part? Has the effort been studied (in-house or independently) and what were the results? How have these findings influenced program directions? What further efforts in the district, state or nation have been spawned as a result?

Details—Research shows that high-performance schools differ from low-performance schools according to these areas:

Goals—Does everybody buy into the mission? Who does, who doesn't, and why? Are the camps talking to each other?

Leadership—Who supports—and how do they encourage—teachers/administrators to change and communities to participate?

Personnel—Who's involved in the effort and how? How do they work together? How do they prepare themselves professionally for new approaches to schooling?

Practices—How do teachers, guidance counselors, administrators, job site supervisors, mentors, and other key players inside and outside the school define the mission and goals, and how have they changed their practices with students as a result? What expectations do they hold for students? What learning styles have they identified and teaching strategies do they use? Who do they work with, collaborate with, plan with? What materials, resources, and curriculum guides do they use? How do they structure their day, their work space? How have all these things affected what a student learns, how and where?

Institutionalization—What steps have been taken to assure that the site can outlive the tenure and attention of founding leaders and directors? How have they insulated themselves from the inevitable changing of the political guard both inside and outside the school? What steps have been taken to move from innovation to institutionalization? What policies, directives are in place (or are needed) to aid this effort?

Support—Have steps been taken to support the initiative in the long haul? Who are the key supporters and why? What attitudes need to be changed and what steps are being taken to do so? Have parents been brought in, have their attitudes changed?

Collaboration—Who are the stakeholders (businesses, community agencies, parents, postsecondary institutions) and how have they been encouraged to participate? Have they been involved in shaping what's studied, how it's studied, and where?

Replication—Could this be replicated elsewhere? What other models of schooling have been drawn upon and why? How do all the pieces fit together?

Outcomes—How is the school fundamentally different for students? Who benefits the most and how? What do students say matters to them? How have their perceptions of school changed?

Andrew Hahn in *Future Options Education* suggests that observers look at the impact on student lives. Here are his questions:

- Are academic subjects related to each other and to the realities of the students' lives and the broader world?
- Are students motivated to stay in school?
- Are students able to discover skills they didn't know they had? To understand what it takes to advance from where they are to where they want to go?
- Are qualities such as teamwork, persistence and resourcefulness valued as much as other more traditional skills?
- Are students exposed to "horizontal broadening" experiences? Are they encouraged to consider a college education, vocational training, and skilled jobs as attainable post-high school goals?

Tips for reporters

Schedule a lot of time for this story. It's not like going to an event, covering it, getting a fact sheet, culling a few quotes and banging it out. I was at a disadvantage. New to the education beat, I didn't even know what an academy was. Use the opportunity to meet more people on the beat, and take any materials they proffer.

When visiting the classes, the students won't be able to talk much, so make contact and collect phone numbers. I connected with about 20 kids who were happy to talk when they weren't in class. While observing the class is crucial, and a lot of fun, schedule time away from the school with the director. The

directors are so bogged down that when they are in school, they can't answer a question without being bugged. (It's not unlike being in the newsroom.)

For the students, ask why they chose the program. This will also get them talking about what they want to do upon graduation. Ask what their grades were like before the program, and how they are now. (If you feel a student's hedging on his grades, a counselor at the school will give an accurate GPA.)

Ask the kids how much time they devote to school work every day. Are they working in the field the programs focused around? What do they think of their teachers? Do they get more attention? Is this better than school was before? Why? Have they been encouraged to attend college? Do they receive tutoring or additional help? Do the courses relate to each other? How? I found the teens answered honestly, but they didn't volunteer information that was not specifically asked.

Talk to their parents. Why did they enroll their children in the program? What do they want their kids to get out of it? Is the program a more practical method of education than general high school?

For teachers, try to get a mix of those who have been at it a long time and will be able to compare regular classes to program classes, and new teachers who specifically wanted to work there. Ask why they chose to work there, and if they feel closer to students. Does the work take more out of them, and do they feel the students are getting more out of school?

How do they work with other teachers? How do they link curriculum? Has teaching there changed their methods? Do they perceive differences in students' academic levels? Is the program working?

For businesses and politicians involved, what are they getting in return? Rather than let them just say how they're helping the teens, find out what the kids actually do. Who's paying them? In Oakland, it was a mix between city funding and private, but ask. Also, hospital administrators seem incapable of returning calls the same day, so again, give yourself time. Why did they become involved in the program? Does the program turn out better educated students? Have any students been hired? Does their specialized course load make them better prepared?

For consultants and other experts on education, read, then call. Ask them what the tenor of the times was like when the program started. This gives you an idea of how and why it was started. Does it work? Why? What still needs to be done? Is it the wave of the future?

For district personnel, start asking for the records and data you need immediately. Speed is not necessarily their forte, and they're under a lot of stress so dealing with reporters isn't always their hobby. Get reports on attendance, grades, ethnic breakdowns, welfare statistics, anything you can that will give you a clearer picture of who these students are. Read the clips on what was going on in the district when the program was formed, and ask them about the political and financial mood of the district to give you an idea of how and why it came about. How are they institutionalizing the program? How do they pick students to be in the program? Check class sizes.

Jacqueline Cutler of the Oakland Tribune *put together these tips for other reporters and writers pursuing promising vocational practices.*

Sources and Materials

Sources

Paul Barton
Policy Information Center
Educational Testing Service
Princeton, NJ 08541-0001
(609) 734-5694
Fax (609) 734-1090

Charles Benson, Director
National Center for Research in Vocational Education (NCRVE)
1992 University Avenue, Suite 375
Berkeley, CA 94704
(415) 642-4004
Fax: (415) 642-2124

Sue Berryman
Institute on Education and the Economy
Box 174
Teachers College
Columbia University
New York, NY 10027
(212) 678-3091
Fax: (212) 678-4048

Sue Bodilly
RAND
2100 M Street N.W.
Suite 800
Washington, DC 20037
(202) 296-5000
Fax: (202) 296-7960

Gene Bottoms
State Vocational Education Consortium[1]
Southern Regional Education Board
592 Tenth Street NW
Atlanta, GA 30318
(404) 875-9211
Fax: 404-872-1477

Cindy Brown
Council of Chief State School Officers[2]
One Massachusetts Avenue NW
Washington, DC 20001-1431
(202) 408-5505

Anthony P. Carnevale
American Society for Training and Development
1640 Duke Street
Alexandria, VA 22313
(703) 683-8100
Fax: (703) 683-8103

Patricia Clark
Health and Bioscience Academy
Oakland Technical High School
4351 Broadway
Oakland, CA 94611
(510) 658-5300

Paul DeLargy
REAL Enterprises
295 East Dougherty Street
Athens, GA 30601
(404) 546-9061
Fax: (404) 353-2014

Florida Blueprint for Career Preparation
Florida Department of Education
Career Development Branch
Tallahassee, FL 32399-0400
(904) 488-0400
Fax (904) 487-3601

Phyllis Frankfort
National Academy Foundation
660 Madison Avenue, #1804
New York, NY 10021
(212) 754-0040
Fax: (212) 754-5139

Steven H. Godowsky
Paul M. Hodgson Vocational-Technical High School
2575 Summit Bridge Road
Newark, DE 19702
(302) 834-0990

W. Norton Grubb
National Center for Research in Vocational Education
University of California
1995 University Avenue
Suite 375
Berkeley, CA 94704
(510) 642-3488

Andrew Hahn
Center for Human Resources
Heller Graduate School
Brandeis University
P.O. Box 9110
Waltham, MA 02254-9110
(617) 736-3774
Fax: (617) 736-3851

Samuel Halperin
William T. Grant Foundation
Commission on Work, Family and Citizenship
1001 Connecticut Avenue NW
Suite 301
Washington, DC 20036
(202) 775-9731
Fax: (202) 872-4050

Stephen F. Hamilton
Department of Human Development and Family Studies
G-57 Martha Van Rensselaer
Cornell University
Ithaca, NY 14853-4401
(607) 255-7620
Fax: (607) 255-9856

Scott Hannah
Floyd S. Kay Technical Center
Route 7
Box 40
Lexington, VA 24450
(703) 463-4488

Madeleine Hemmings
National Association of State Directors Vocational Technical Education
1616 P St. NW, #340
Washington, DC 20036
(202) 328-0216

Dan Hull
Center for Occupational Research and Development
601 C Lake Air Drive
Waco, TX 76710-1689
(817) 772-8756
Fax: (817) 772-8972

Roberts Jones
Assistant Secretary for Employment and Training
Department of Labor, S-3207
200 Constitution Avenue NW
Washington, DC 20210
(202) 523-6050

Susan Klein
Re: Learning
Education Commission of the States
707 17th Street
Suite 2700
Denver, CO 80202-3427
(303) 299-3648

Lisa Lasky
Coalition of Essential Schools[3]
Brown University
1 Davol Square
Providence, RI 02903
(401) 863-3384

Laura L'Esperance
National Tech Prep Network
P.O. Box 21689
Waco, TX 76702-1689
1-800-231-3015
Fax: 772-8972

Dennis Loftus, Superintendent
New Castle County Vocational
Technical School District
1417 Newport Road
Wilmington, DE 19804
(302) 995-8050

Ira C. Magaziner, President
SJS, Inc.
56 Pine Street
Providence, RI 02903
(401) 421-5990
Fax: (401) 421-1001

Fred Monaco
Division of Applied Technology
and Career Development
635 Ridge Avenue
Pittsburgh, PA 15212
(412) 323-3160
Fax: (412) 323-3185

John Morris
Rockbridge High School
P.O. Box 160
Fairfield, VA 24435
(703) 348-5100

Jeannie Oakes
Graduate School of Education
University of California
405 Hilgard Avenue
Los Angeles, CA 90024-1521
(310) 825-2494
Fax: (310) 206-6293

Barbara Roche
Jobs for the Future[4]
1815 Massachusetts Avenue
Cambridge, MA 02140
(617) 661-3411
Fax: (617) 661-2799

Larry Rosenstock
Rindge School of Technical Arts
459 Broadway
Cambridge, MA 02138
(617) 349-6751
Fax: (617) 349-6770

Tom Smith
Public/Private Ventures
399 Market Street
Philadelphia, PA 19106
(215) 592-9099

David Stern
School of Education
University of California
Berkeley, CA 94720
(510) 642-0709
Fax: (510) 643-6239

Marc Tucker
National Center on Education
and the Economy
39 State Street, Suite 500
Rochester, NY 14614
(716) 546-7620
Fax: (716) 546-3145

James Van Erden
Office of Work-Based Learning
U.S. Department of Labor, N-4649
200 Constitution Avenue NW
Washington, DC 20210
(202) 535-0540
Fax: (202) 535-0986

Winifred Warnat
Office of Vocational and
Adult Education
U.S. Department of Education
330 C Street SW, Rm. 4315
Washington, DC 20202
(202) 732-2441
Fax: (202) 732-9548

Paul Weckstein
Center for Law and Education[5]
1875 Connecticut Avenue, NW #510
Washington, DC 20009
(202) 986-3000
Fax: (202) 986-6648

Jim Wernsing
Roosevelt Renaissance 2000
Roosevelt High School
6941 North Central Street
Portland, OR 97203
(503) 280-5138

[1]States which are members of the SREB Consortium are listed on page 23.

[2]States involved in the design phase of the CCSSO project include: Arkansas, California, Illinois, Iowa, Michigan, Pennsylvania, Vermont, Virginia, West Virginia and Wisconsin.

[3]Vocational schools that are part of the Coalition for Essential Schools Re:Learning project include Hodgson Vocational-Technical School and three schools in Chicago—Chicago Vocational High School, Flower Vocational High School and Lindbloom Technical High School.

[4]Jobs for the Future plans to have 15 sites eventually. Currently, they have announced sites in Boston, Cambridge (Rindge), Comstock (MI), Easley (SC), Ithaca (NY), Oakland (CA-Health and Bioscience Academy), Pasadena (CA), Pennsylvania, Portland (OR), and Tulsa (OK).

[5]Center for Law and Education VOCED sites include Rindge School of Technical Arts (Cambridge) and programs in Chicago—Bethel New Life, a community project, Westinghouse Vocational High School, Flower Vocational High School, and Rezin Orr Community Academy (see page 35).

Selected Materials

America's Choice: high skills or low wages!, Commission on the Skills of the American Workforce, National Center on Education and the Economy, 1990.

Beyond High School: The Transition to Work, Educational Testing Service, Princeton, NJ, 1990.

Blueprint for Career Preparation, Florida Department of Education, 1991.

Anthony Patrick Carnevale, *America and the New Economy*, the American Society for Training and Development and the U.S. Department of Labor, Employment and Training Administration, 1991.

Changing High Schools: A Progress Report on the SREB-State Vocational Education Consortium, Southern Regional Education Board, August 1991.

First Jobs: Young Workers in a Changing Economy, Education Writers Association, 1990.

The Forgotten Half: Pathways to Success for America's Youth and Young Families, final report, Youth and America's Future: The William T. Grant Foundation Commission on Work, Family and Citizenship, 1988.

Future Options Education: Handbook on How to Help Young People in the Middle-Grades Aspire and Achieve, Center for Human Resources, Heller Graduate School, Brandeis University, Waltham, Mass., 1990.

Howard Gardner, *The Unschooled Mind: How Children Think and How Schools Should Teach*, New York: Basic Books, 1991.

Stephen F. Hamilton, *Apprenticeship for Adulthood: Preparing Youth for the Future*, New York: The Free Press, 1990.

Dan Hull and Dale Parnell, *Tech Prep Associate Degree: A Win/Win Experience*, Center for Occupational Research and Development, 1991.

Improving General and Vocational Education in the High Schools, Southern Regional Education Board, 1989.

John L. Puckett, *Foxfire Reconsidered: A Twenty-Year Experiment in Progresssive Education*, Urbana: University of Illinois Press, 1989.

Robert B. Reich, *Education and the Next Economy*, National Education Association, 1988.

George Richmond, *The Micro-Society School: A Real World in Miniature*, New York: Harper & Row, 1973.

Theodore R. Sizer, *Horace's School: Redesigning the American High School*, Boston: Houghton Mifflin Co., 1992, and *Horace's Compromise: The Dilemma of the American High School*, Boston: Houghton Mifflin Co., 1984.

David Stern, *Combining School and Work: Options in High Schools and Two-Year Colleges*, U.S. Department of Education, Office of Vocational and Adult Education, 1991.

Re: Learning Resource Packet, Education Commission of the States, 1991.

The School-To-Work Connection, U.S. Department of Labor, U.S. Department of Education, report of a conference, May 1990.

Training for Work: What the U.S. Can Learn from Europe, Education Writers Association, 1990.

Training Strategies: Preparing Noncollege Youth for Employment in the U.S. and Foreign Countries, U.S. General Accounting Office, 1990.

What Work Requires of Schools: A SCANS Report for America 2000, Secretary's Commission on Achieving Necessary Skills, U.S. Department of Labor, 1991.

Youth Apprenticeship, American Style: A Strategy for Expanding School and Career Opportunities, Consortium on Youth Apprenticeship, report of a conference, Dec. 7, 1990.

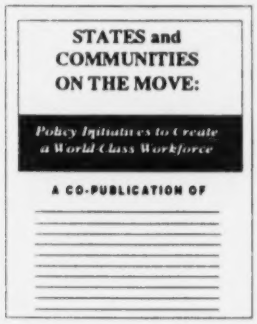
ANNOUNCING IMPORTANT NEW RESOURCES FROM...

Youth and America's Future:

The William T. Grant Foundation Commission on Work, Family and Citizenship

ESSENTIAL TOOLS FOR TEACHING, RESEARCH & POLICYMAKING

JUST RELEASED—A FIRST OF ITS KIND RESOURCE:



STATES AND COMMUNITIES ON THE MOVE: POLICY INITIATIVES TO CREATE A WORLD-CLASS WORKFORCE.

A rich sampling of state and local efforts to build effective links among schooling, training, and the workplace. Summarizes 60 initiatives asking: How were they started, and what are they doing? How are they financed? What difficulties have been encountered and overcome? What is known about their effects?

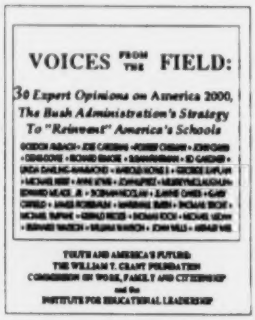
Examples include new planning structures for human investment policies; state-wide school-to-employment transition policies; student apprenticeship, "tech prep" and other experience-based learning initiatives; second chance efforts for dropouts; partnerships between education and employment; pathways to postsecondary education; and creative funding mechanisms. **$5.00 prepaid.**

AND—BRIDGING THE GAP BETWEEN POLICY AND PRACTICE:

VOICES FROM THE FIELD: 30 EXPERT OPINIONS ON AMERICA 2000, THE BUSH ADMINISTRATION STRATEGY TO "REINVENT" AMERICA'S SCHOOLS

Essays by Chubb, M. Smith, Kirst, Howe, Lipsitz, Darling-Hammond, Cardenas, Ambach, Meade, Timpane and 20 others examine proposals that could change the face of American education.

"Readable and first rate! Whether pro or con, the authors make their points with the insight borne of long experience—in education, government, and public policy." **$3.00 prepaid.**


VOICES FROM THE FIELD:
30 Expert Opinions on America 2000, The Bush Administration's Strategy To "Reinvent" America's Schools

---

ALSO AVAILABLE...

The Forgotten Half: Pathways to Success for America's Youth and Young Families. This much-quoted 208-page report summarizes an impressive array of interdisciplinary research and promising practices to help older adolescents succeed as workers, parents, and citizens. **$5.00 prepaid.**

Current Federal Policies and Programs for Youth *by J.R. Reingold and Associates.* An easy-to-use guide through the maze of hundreds of federal funding programs for adolescents and young adults in five major government departments. **$5.00 prepaid.**

American Youth: A Statistical Snapshot *by James R. Wetzel.* Documents comprehensively the current status of American youth and the demographic trends that affect their future and ours. **$5.00 prepaid.**

THE EDUCATION AND HUMAN SERVICES CONSORTIUM
SERIES ON COLLABORATION

OVER 100,000 IN PRINT:

As reported in the *New York Times, Washington Post, Education Week, Phi Delta Kappan*...A timely, easy-to-read series on comprehensive services designed for:

- ❒ policymakers
- ❒ educators & public and private agency practitioners and administrators
- ❒ community leaders
- ❒ board members
- ❒ business leaders

WHAT IT TAKES: STRUCTURING INTERAGENCY PARTNERSHIPS TO CONNECT CHILDREN AND FAMILIES WITH COMPREHENSIVE SERVICES

by Atelia I. Melaville with Martin J. Blank. Describes the elements of high quality service delivery, distinguishes between cooperative and collaborative strategies to provide services, and examines a dozen examples of local efforts to illustrate the key factors that lead to effective collaboration and help overcome the most common barriers to change. *"...an excellent and persuasive monograph combining the theoretical case for collaboration with a clear, concise 'how to do it' approach. Congratulations are very much in order..."* —Richard Doughty, Regional Director, Joint Action in Community Service, Inc., Seattle, Wash. **$3.00 prepaid.**

THINKING COLLABORATIVELY: QUESTIONS AND ANSWERS TO HELP POLICY MAKERS IMPROVE CHILDREN'S SERVICES

by Charles Bruner. Ten questions and answers range from understanding what problems collaboration can solve to knowing when it's working. Includes a series of checklists to help policy makers increase the likelihood that local collaboratives will serve as genuine catalysts for reform. **$3.00 prepaid.**

NEW PARTNERSHIPS: EDUCATION'S STAKE IN THE FAMILY SUPPORT ACT OF 1988

A Statement of the Education and Human Services Consortium. An overview of the landmark Act and the opportunities it offers for education and welfare communities to address common concerns. **$3.00 prepaid.**

SERVING CHILDREN AND FAMILIES EFFECTIVELY: HOW THE PAST CAN HELP CHART THE FUTURE

by Peter B. Edelman and Beryl A. Radin. (Commentary by Sidney L. Gardner.) Over the past 30 years, thinking about how to structure and improve human services has been clouded by myth and rhetoric. The authors explore this inheritance and revisit numerous service and access models of the '60s and '70s to develop a new perspective for the '90s. **$3.00 prepaid.**

✂ - - -